

S.36A



S.36A

The Bulletin of the Amateur Entomologists' Society

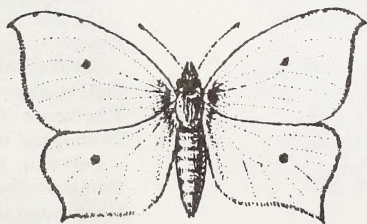
World list abbreviation:

Bull. amat. Ent. Soc.

VOL. 46



Edited by
Brian O. C. Gardiner FLS



1987

Published by
The Amateur Entomologists' Society
355 Hounslow Road, Hanworth, Feltham, Middx.
ISSN 0266-836X

SUBJECT INDEX

- A case of parthenogenesis in a mantid, 160
- A conservation dilemma, or, what to do, 92
- A curator's viewpoint, 84
- An account of the phasmid *Bacillus cyprius*, 214
- Annual Exhibition, 114, 119
- Annual Reports for 1985, 1
- Annual Reports for 1986, 182
- An observation of hymenoptera parasites hunting for larvae, 130
- A swallowtail in Sussex, 213
- A third stick insect established in Britain, 160
- Bernwood Forest — records wanted, 155
- Breeding the Marsh fritillary, 143
- Butterflies in Lorraine during 1983, 57
- Butterflies of the Val d'Aran, 44
- Butterfly and moth stamp supplier, 91
- Butterfly collecting trips to Costa Rica, 20
- Butterfly-trapping in Finland, 21
- Catalonia, June/July 1984, 53
- Centenary of the Verrall Supper, 63
- Collecting in Mayrhofen, July 1985, 46
- Collecting in the Languedoc-Rousillon area, September 1986, 232
- Comma butterfly north of York, 94
- Common names: 'Louse/Lice', 29
- Concern for collections, a broader view, 86
- Concerning museums and collections, 82
- Concerning new books, 127
- Deathshead Hawk in Oxfordshire, 42
- Does the Brimstone have an alternative foodplant?, 239
- Dragonflies visiting the dogwood bush, 222
- Drymonia ruficornis*, 125
- Dunbar moth and its diet, 56
- Early spring Red admirals, 159
- Fauna and Flora Preservation Society, 93
- Featured museums No. 5, 25
- Handle all your chemicals with caution, 13
- Heath, John, 115
- Hibernating the Comma butterfly, 239
- Hummingbird hawk and Oak eggar in Wolverhampton, 158
- Hyalophora cecropia* (Saturnidae), an urban pioneer, 240
- Ichneumon, 163
- In praise of Merthyr Mawr, 159
- Insect parasites, 98
- Insects in Cyprus, May/June 1985, 103
- Insects of the Montgomery Canal, 151
- In the Isles of Scilly, 234
- Jealotts Hill Photographic Competition, 15, 121
- Junior Fieldweek, 1986, 64
- Lepidoptera note from Scotland, 161
- London Ecology Centre, 156
- Lunar underwing moth in Staffordshire, 157
- Macrophotography, 221
- Maculina arion* in the Dordogne, 1985, 43
- Maraca Rain-forest project, 90
- Marris House nets, 93
- Milkweed or Monarch, 135
- 'Mothballs' and other insecticides used in insect collections, 109
- Moth mimic birdlime, Guano guano, 163
- Moths on lighted windows, 24
- Motorways and cross-movement, 92
- New Forest Invertebrate Survey, 156
- No straight way across, 33
- Not quite moths, 49
- Observations on breeding the Spurge hawkmoth, 147
- Omission from the 1987 Membership list, 181
- Orchid pollinators — a request, 90
- Pairing notes on the Philippine Giant atlas moth, 153
- Procheorodes transversata*, 40
- Professor Hering Memorial Research Fund, 91
- Psocoptera of Warwickshire, 31
- Purple and White-letter hairstreaks on Elm, 146
- Purple Hairstreak, 94
- Rare aberration of the Red admiral, 162
- Rare migrant Hawkmoths in Staffordshire, 81
- Rearing the Purple hairstreak, 164
- Scientific and vernacular names, 231
- Some observations on butterflies in Switzerland and France, 223
- Some observations on the genus *Erebia* (Dolomites), 196
- Some notes on the earwigs *Labia minor* (L) and *Forficula auricularia*, 131
- Spread of the Latticed heath in Staffordshire, 28
- Staffordshire dragonfly records, 108
- Stag beetle sightings, 149
- Swallowtail butterflies on the island of Palawan, 189
- Syntomis phegea*, 51
- Symposium on Arachnids, 63
- The butterfly and the caterpillar, 180
- THEFT — stolen from Bristol Museum, 181
- The hidden menace of PDB, 14
- The mouse with a Royal appetite, 195
- The Saddleback moth *Sibine stimulea*, 227
- Trichoptera in Malta, 50
- Uleiota planata* in Dyfed, 159
- Unusual occurrence of Large white, 157
- Ups and downs of the New Forest, 71
- Whites roosting on the dogwood bush, 81
- Wildlife sites in Sussex — help wanted, 222

BOOK REVIEWS

Advances in insect physiology, Vol. 18, 136
 An Atlas of the Carabidae (ground beetles) of Northumberland and Durham, 38
 An indexed list of British Butterflies and Moths, Scientific and English names, 97
 Atlas over uiklernes udbredelse i Danmark, (Tortricidae and Cochylidae), 37
 Breeding butterflies and moths, 38
 British Pyralid moths: a guide to their identification, 34
 Butterflies and late loves, 96
 Butterflies and moths of Derbyshire, 139
 Butterfly distribution maps — present state of recording in Dorset, 1985, 138
 Butterflies of Europe, Vol. 8, Aspects of the conservation of butterflies in Europe, 141
 Charipidae, Ibalidae and Figitidae, Hymenoptera: Cynipoidea, 36

Country Life guide to dragonflies and damselflies of Britain and Northern Europe, 137
 Handbook, Identification of British Insects, Vol. 8, Part 1c, 36
 History of the Hope Entomological Collections in the University Museum, 139
 Insect locomotion, 140
 Ladybirds in Dorset, 35
 R.S.N.C. Guide to butterflies of the British Isles, 96
 Sphingidae Mundi — Hawkmoths of the world, 140
 The insects of Thorne Moors, 211
 The Natural History of butterflies, 95

BOOKS NOTICED

An indexed list of British butterflies and moths, 17
 Breeding butterflies and moths, 19
 Bumblebees, 212
 Butterflies and other insects of the Eastern Caribbean, 129
 Butterflies of the British Isles; the Nymphalidae, 129
 Butterflies of the London area, 211
 California butterflies, 129
 Collins guide to the insects of Britain and Western Europe, 129
 Colour identification guide to the butterflies of the British Isles, 18
 Conservation of the Chequered skipper in Britain, 129
 Die Bombyces und Spinges der Westpalaerktis, 212
 Dragonflies, 212

Garden creepy-crawlies, 129
 Handbook of insect collecting, 20
 Hoverflies, 129, 212
 How to begin the study of spiders, 129
 Management of chalk grassland for butterflies, 129
 Moths and butterflies of Great Britain and Ireland (paperback editions, Vols. 1, 9 and 10), 19
 Moths of the British Isles (2 vols.), 18
 Pest control for Bees: a manual and directory for the tropics and sub-tropics, 16
 Spiders of Great Britain and Ireland, 129
 The moths and butterflies of Northumberland and Durham, Part 1: Macrolepidoptera, 212
 The moths of Borneo, 212

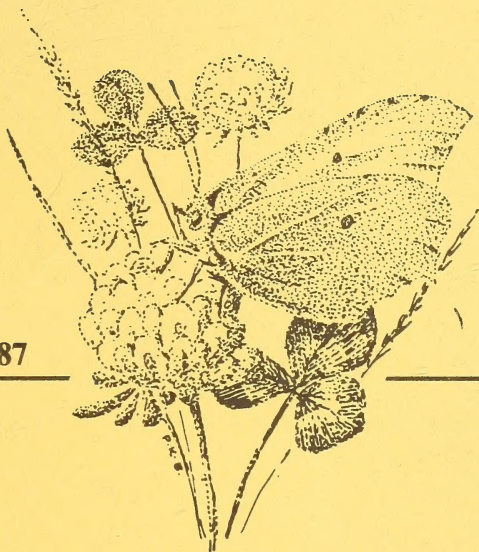
INDEX OF CONTRIBUTING AUTHORS

- Anon, 195
 Betts, Clive, 37
 Biley, Howard, 163
 Birkett, Neville L., 94
 Bragg, Phil, 160, 221
 Brock, Paul D., 103, 214
 Brooker, Robin, 53
 Caswell, Wesley, 227
 Charlton, Paul N., 39
 Church, Joe, 153
 Cooper, John E., 136
 Copestake, David, 64
 Copestake, Stephen, 75
 Cribb, Peter W., 223
 Donald, Richard M., 33
 Eastwood, C. R., 49
 Editor, The, 15, 82, 127, 211
 Edwards, David A., 98
 Emmet, A. M. 231
 Esbacher, Chris, 11, 189
 Fitter, David, 69
 Fitter, Robert, 72
 Fry, R. A., 3, 183
 Gossling, Nigel, 196
 Grayson, A., 94
 Gregory, John L., 40, 125
 Griffiths, P., 115
 Hart, Colin, 8, 140, 188
 Harvey, Robert, 189
 Hayward, Roger, 117, 118
 Higgs, Corrin, 64
 Hobbs, T. A., 164
 Hollier, J. A., 151
 Hope, Mark A., 146
 Irwin, Roderick R., 14
 Jackson, E., 213
 Jewess, P. J., 34, 97
 Johnson, Dorothy, 50
 Joy, D. W., 147
 King, Gareth, 159, 232
 Knight, Guy T., 158
 Knight, T. F., 96
 Koryszko, Jan, 24, 28, 56, 81, 108, 130,
 135, 157
 Lauren, Joseph, 180
 Lavery, J. W., 157
 Legg, Gerald, 25, 109
 Lewis, Owen, 75
 Lonsdale, David, 8
 MacClellan, Andrew, 90
 MacFadyen, I, 46, 90
 Majerus, Mike, 35
 Mann, Darren, 73, 78
 Marples, Frank, 149
 Mathias, J. H., 86
 McCann, Frank, 161
 McNamara, Don, 143, 163
 Moon, Dave, 51
 Moreby, C., 29, 31
 Murdoch, Robert, 13, 239
 Nash, Steve, 77, 234
 Painter, S. A., 3, 137
 Parsons, Malcolm, 11
 Partridge, Lucas, 68
 PAS, 37, 38
 Pavett, P. M., 159
 Payne, John, 239
 Penney, C. C., 139, 183, 211
 Piatkus, Anne, 69
 Pittkin, Peggy, 222
 Plester, Leigh, 21
 PWC, 38, 95, 96, 140, 141
 Reavey, Duncan, 80, 138
 Reavey, Simon, 65, 80
 Schembri, Stephen, 50
 Shreeve, T. G., 155
 Slater, A. M., 44
 Smith, J. A. D., 43
 Stevens, Lorna, 66
 Tennent, John, 12
 Tilley, R. J. D., 57
 Turner, J., 42
 Walmsley, A., 151
 Ward, G. R., 117
 Wistow, R. J., 141
 Wootton, Anthony, 131
 Wright, Adam, 84
 Young, Chris, 240
 Young, Robert, 162

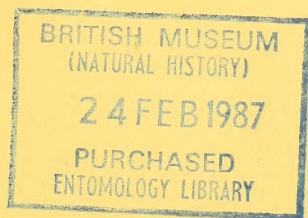
S.36 A



Volume 46, No. 354, February 1987



The Bulletin of the Amateur Entomologists' Society



EDITOR
BRIAN O.C. GARDINER, F.L.S.

The Amateur Entomologists' Society

Founded in 1935

President:	S. A. A. PAINTER	126 Village Way, Ashford, Middlesex TW15 2JX.
Hon. General Secretary:	C. C. PENNEY	109 Waveney Drive, Springfield, Chelmsford, Essex CM1 5QA.
Hon. Treasurer:	R. A. FRY	4 Marennes Crescent, Brightlingsea, Colchester, Essex CO7 0RX.
Registrar:	NANCY CRIBB (Mrs)	355 Hounslow Road, Hanworth, Feltham, Middx TW13 5JH.
Hon. Bulletin Editor:	B. O. C. GARDINER	18 Chesterton Hall Crescent, Cambridge CB4 1AP.
Hon. General Editor:	P. W. CRIBB	355 Hounslow Road, Hanworth, Feltham, Middx TW13 5JH.

WHERE TO WRITE

First subscription (including entrance fee) £5, or £4 under 18, changes of address, non-arrival of Bulletins, membership applications and records.

REGISTRAR (Mrs Cribb)
Address as listed above.

Subscription renewals
£4 or £3 (under 18):

NANCY CRIBB (Mrs), 355 Hounslow Rd,
Hanworth, Feltham, Middlesex TW13 5JH.

Manuscripts, drawings and books for review:

B. O. C. GARDINER
Address as listed above.

Advertisers:

R. DYKE, 6 Grange Park Avenue,
Grange Park, London N21 2LJ.

Exhibition matters:

R. F. McCORMICK
125 Brocks Drive, North Cheam,
Sutton, Surrey.

General enquiries:

C. C. PENNEY
Address as listed above.

J.C.C.B.I. representative:

C. HART, Fourpenny Cottage,
Dungates Lane, Buckland,
Surrey RH3 7BD.

Conservation matters:

D. LONSDALE, Forest Res. Stn.
Alice Holt Lodge, Wrecclesham,
Farnham, Surrey GU10 4LH.

Wants and Exchange:

M. COLVIN
1 Sedgewick Close, Pound Hill,
Crawley, Sussex RH10 4BQ.

A.E.S. Exotic Insects Group:

C. J. ESCHBACHER, 38 Frith Road,
Bognor Regis, Sussex PO21 5LL.

**A.E.S. Insect Behaviour and
Ants Study Group:**

M. M. PARSONS, 95 Glebe Lane,
Barming, Maidstone, Kent ME10 9BA.

Worldwide Butterflies

and LULLINGSTONE SILK FARM

COMPTON HOUSE

Tel: Yeovil (0935) 74608 Sherborne, Dorset.



1987

LIVESTOCK CATALOGUE

British and European eggs,
larvae and pupae.

Giant Silkmooths, Hawks.

Exotic Papilios, Pierids
and Nymphalids.



OPEN DAILY April 1 - Oct 31
10am - 5pm including weekends

(on A30 Yeovil-Sherborne dual carriageway)

Set & Papered Specimens

SUPERB BRITISH BUTTERFLIES

(from old collections)

Other British and European Lepidoptera.

Set and papered Exotics
from many parts of the world.

When writing please enclose SAE. Thank you.

LIVING BUTTERFLIES IN A
STATELY HOME
FREE FLYING AMONGST
TROPICAL PLANTS

COLLECTIONS FROM ACROSS
THE WORLD

VINTAGE TRACTORS & FIRE ENGINE
TV FILMS
EDUCATIONAL DISPLAYS

BUTTERFLY HOUSE PALM HOUSE
GARDENS

BOOKS · SPECIMENS · LIVESTOCK
EXCITING GIFT SHOP

VISIT US AGAIN IN 1987

**NEW DISPLAYS
& FACILITIES**

WET OR FINE - NOW EVEN MORE TO SEE!



THE LONDON BUTTERFLY HOUSE

SYON PARK

THE WORLD'S LARGEST
LIVE BUTTERFLY SAFARI

Tropical gardens under glass where whatever the weather you can stroll among **FREE FLYING** butterflies from all over the world. All stages of breeding. Courtship displays among exotic flowers, jungle foliage and water plants.

AN EXHIBITION

An educational collection. Live insects – giant spiders, leaf cutting ants, stick insects, praying mantis etc.

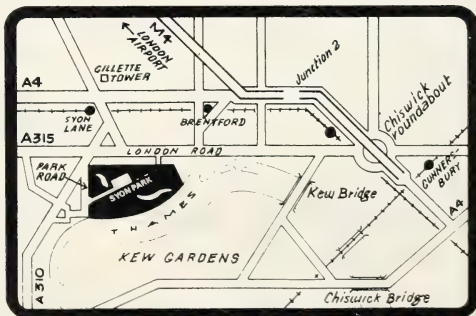
Browse around the Butterfly Shop

Gifts – all with a butterfly motif. Books and charts.
Equipment for the amateur entomologist.
Livestock for rearing at home and school.

A day out for all the family, a motor museum, the Garden Centre and Syon House itself.

How to get there

Open from 10am
to 5pm 7 days a
week throughout
the year



Special rates for
organised groups
and schools – ring
01-560 7272

FREE CAR PARK

ENTOMOLOGY

**BOOKS & PRINTS
BOUGHT & SOLD**



*Mail Order specialists in rare
and secondhand books.
New books also supplied.*



Search service for O/P titles.



CATALOGUE FREE ON REQUEST

JOHN TROTTER

11 Laurel Way, London N20
Telephone 01-445 4293

transworld butterfly company



compañía transmundo de mariposa

Specialists in South American
lepidoptera, over 50 morpho species
offered. Parnassius from
Europe/China. Worldwide butterfly
specimens for collector or framers.
Small orders welcome, dispatched
by UK warehouse.

SPRING 1987 CATALOGUE

31p stamp for airmail reply please

MAILING LIST

*Catalogues/newsletters issued
monthly for 12 months — £2 / \$6*

BUTTERFLY/BIRDWATCHERS TOURS TO COSTA RICA

Send 31p stamp for full details

TRANSWORLD BUTTERFLY COMPANY (AE)

Apartado 6951, San José,
COSTA RICA, Central America

The Entomologist's Record

and Journal of Variation

A bimonthly illustrated magazine founded by J. W. Tutt in 1890, is devoted mainly to the Lepidoptera of the British Isles. It also deals with other orders of insects especially Coleoptera, Diptera, Hymenoptera, Orthoptera. Its articles include descriptions of new species and varieties, reports on collecting trips, distribution, habits and habitats of insects and of collecting and study techniques suitable for novice and expert. It circulates in 47 countries.

Annual United Kingdom subscription £15.00

Specimen copies are available from the Publicity Director,
4 Steep Close, Orpington, Kent BR6 6DS
price £1.20, postage included.

AES EXOTIC ENTOMOLOGY GROUP

Are you interested in
**PHASMIDS, SATURNIIDS, MANTIDS,
ARACHNIDS, etc?**

You are
Well, why not join us?

Subscription is £5.00 annually.

This brings you:—

Quarterly illustrated News Letter with tips on rearing.
Major articles on exotic insects etc.

Twelve copies of Monthly Information Sheet of livestock
currently available from January to December.

For details send SAE to:— EEG Secretary, 38 Frith Road,
Bognor Regis, Sussex PO21 511

INSECT BEHAVIOUR AND ANTS STUDY GROUP

Are you interested in any form of insect behaviour or ants
study, exchanging ideas with members of similar interest or
making observations and carrying out experiments in insect
behaviour?

For £1.00 subscription, the Group offers:-

A FULL LIST OF MEMBERS

A QUARTERLY NEWSLETTER with suggestions for practical
work, members' articles and letters and book reviews.

MEETINGS arranged during the summer to observe and
experiment in the field and perform any special projects.
Beginners and more experienced Entomologists are
welcome.

Membership applications, offers of help and enquiries to:-
M. M. Parsons, 95 Glebe Lane, Barming, Maidstone, Kent
ME16 9BA.

AES BULLETIN

No. 354



THE AMATEUR ENTOMOLOGISTS' SOCIETY

ANNUAL REPORTS FOR 1985 OF THE SOCIETY AND ITS ASSOCIATED BODIES

OF THE COUNCIL

The year in which we celebrated our 50th Birthday was looked upon as a special year. Sadly we suffered a very great loss at the beginning of the year with the death of our esteemed colleague Roy Hilliard. His absence will for long be felt by Council. Our various activities for the Golden Jubilee rewarded us with the 'discovery' of Norman Brangham, a founder member and collaborator with Beowulf Cooper. We are glad to report that he has accepted Honorary Life membership.

The membership shows an increase to 1,996, composed of nine Honorary Life, 36 Life, 43 Associate and 1,908 Ordinary and Junior members. It must be said that there is a considerable movement in the last category with many only staying in the Society for a short while. Norman Brangham's number is 18 and our latest is 8,500. The Council met on six occasions — at the National Liberal Club —

under the Chairmanship of Colin Hart, our President, and our Elected chairman, Paul Sokoloff. Robert Dyke accepted the post of Advertising Secretary, previously undertaken by Roy Hilliard. The geography of the Liberal Club was an education, covering history from Gladstone and the young Churchill. The lofty libraries, marble staircases and mini-lifts added interest, as well as a flood of torrential rain which forced its way through a weakened roof and interrupted a meeting. We settled in, only to learn with dismay that we would have to find yet another venue as the building had been sold.

We commemorated our Golden Jubilee by issuing a re-print of the very rare Vol. I of the *Bulletin*, a special August number of the *Bulletin*, a free car-sticker and a First Day cover depicting the Brimstone butterfly, designed by Rob Dyke, to coincide with the Post Office issue of insect stamps designed by Gordon Benningfield. A Garden Party was held at the home of our president, Colin Hart, and for those members present it was a joy to relax and enjoy the company. It had been hoped that a brief biography of our founder, the late L. R. Tesch, could have been completed but insufficient had been discovered about him. Sid Painter still wishes to hear from any member who has information, anecdotal or otherwise.

The format of the *Bulletin* was changed with the February issue, with a more visually appealing cover with artwork by Peter Banks. Our Editor, Brian Gardiner again produced a wide range of articles and the 1984 Hammond Award was made to Mr A. D. Smith for his article *Observations on the Adonis Blue*.

Our publications continue steadily in demand and it was necessary to reprint *A Lepidopterist's Handbook*. The *Hymenopterist's Handbook* and the *Coleopterist's Handbook* are out of stock and revised editions are in the course of preparation. A new publication *The Phasmid Reared's Handbook* by Paul Brock was published during the year and is selling well. Pamphlet No. 12 was also printed and this contained reprints of *Some British Moths Reviewed* by W. H. T. Tams and *A Guide to the Critical Species* by Messrs Heath, Cooke, Skelton and Reid.

Our AGM was well attended and a number of members added to the event by bringing along seasonal exhibits. The address was given by Dr M. Collins of the IUCN on the subject "Insect extinction in the 20th Century".

The Annual Exhibition at Hounslow Civic Centre proved as popular as ever, thanks to the organisation by Colin Hart and his helpers. The allocation of tables was changed in order to meet the safety regulations imposed by the Council. A decision was taken to ban the sale of a number of British species of butterfly, not covered by legislation, unless sold by licensed breeders. The listed species were advised by the Nature Conservancy Council. An eleventh hour withdrawal of catering facilities was only overcome with the ready help of Mrs Jill Painter, Richard Painter and fellow-sixth-formers who promptly offered their services. Whilst there were more members' exhibits this year, we should like to see even more to make it more of an Exhibition. The Sir Eric Anson award was made to Timothy Gillen for his exhibit "Experiments with Fruit Flies". Hopefully we shall see more competition for this award in 1986. This year we displayed the first ICI (Jealott's Hill) Photography Competition entries. The theme was "Camouflage in Insects" and the prize of £50 was won by N. Hutchinson for his print of a larva of the Brown hairstreak.

We welcome new members to our Advisory Panel; Dr D. Sheppard (Sawflies); Dr I. Wallace (Aquatic insects); Dr S. Nicholls (Aquatic larvae). Further volunteers to serve on the Panel are always welcome.

We are sad to record the deaths of some of our valued members amongst whom were Bill Beer, who will be remembered for his encouragement to many members in providing them with larvae of such species as the Deaths-head and Oleander hawk moths; K. Airey Shaw, our adviser on food-plants. He died in his 83rd year, still an active botanist, and was responsible for an early postwar publication, *A Directory of Natural History Societies*, and Dr T. Macan, our adviser for Ephemeroptera, Plecoptera and aquatic Het-bugs.

S. A. A. Painter
Honorary Secretary



OF THE TREASURER

I am very pleased to be able to report that the year ended 31st December 1985 was another successful year for the Society financially. As you will know, the Society published a special August *Bulletin* last year, together with a reprint of our first *Bulletin* issued in 1935/36, to commemorate the Society's Golden Jubilee. Council agreed that the cost of the additional reprint should be met from the Hammond fund and if we deduct this from the Income and Expenditure Account the General Fund income was up by over £1,138 to £11,652 and expenditure up by £1,842 to £10,828. In consequence, the General Fund had a surplus of income over expenditure of £824 and the total value of the Fund now stands at £10,030. In view of the healthy state of affairs it will be possible to maintain subscriptions at their current rates for yet another year.

On the Publications front, sales increased in value by £756 to £6,788. After payment of the publications agent's commission and other expenses, the Fund recorded a trading surplus of £1,859 and the total value of the Fund now stands at £28,808.

I should like to record my appreciation to Roy Stallwood, my assistant Treasurer, who has now found it necessary to stand down from this task after dealing with it for many years. My thanks also to our Honorary Auditor, Tony Pickles of Robert W. Watson and Co., for his support in verifying the Society's accounts once again.

R. A. Fry
Honorary Treasurer

PUBLICATIONS TRADING ACCOUNT **FOR THE YEAR ENDED 31st DECEMBER 1985**

	1984 £	1985 £	1984 £	1985 £
New and Revised Publications Costs:				
10 Editorial		40	6032 Sales (Gross)	6788
1291 Printing		3533	— Increase in Value of Stocks	1367
2413 Selling and Other Expenses		3581		
512 Decrease in Value of Stocks		2715		
		6296		
1806 Trading Surplus to Publications Fund	1859	1859		
	<u>£6032</u>	<u>£8155</u>		<u>£8155</u>

R. A. FRY, Hon. Treasurer
Dip.EE, C.Eng, MIEE, FRES.

The Report of the Auditors to the Members of The Amateur Entomologists' Society

We have examined the records of the Amateur Entomologists' Society, and in our opinion the Balance Sheet gives a true and fair view of the state of affairs on 31st December 1985 and of the Income and Expenditure for the year ended on that date.

Robert Watson & Co.
91/92 Hig Street, Lymington, Hants SO4 9AP.

A. J. PICKLES, F.C.A.

INCOME AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED 31st DECEMBER 1985

[illegible]

OF OUR REPRESENTATIVE ON THE JOINT COMMITTEE FOR THE CONSERVATION OF BRITISH INSECTS

There have been two meetings of this committee in the past twelve months. The executive sub-committee, formed at the instigation of the AES, has also met on two occasions; Dr Lonsdale and myself have been present at all four meetings.

In the first six months of its existence the executive sub-committee has proved to be well worthwhile. With only seven members business proceeds much quicker than before and the more frequent meetings produce a faster turnover of work. The Nature Conservancy Council has to submit proposals to the government for the quinquennial review of the Wildlife and Countryside Act. These proposals were discussed by the JCCBI at great length and there were many different points of view.

In conclusion the Committee did not think that the Chequered skipper should remain listed but broadly agreed with the remaining suggestions. The question of finance is still a problem for the JCCBI primarily because it has no direct membership. It is planned to appoint a full-time insect conservation officer and grant applications have been submitted to the World Wildlife Fund and the Nature Conservancy Council for this post.

We were informed that the JCCBI is in advance of any similar organisation in Europe. The Bern Convention, which aims to protect European wildlife, lists no insects despite efforts by our DoE in the past. In response to this the JCCBI is forming a committee to list European insects in need of conservation action, and to advise and lobby national delegates to the convention.

The JCCBI Code of Practice on insect re-establishment has been finalised and published in *Antenna* and also as a leaflet. The aims of this Code are to promote good ecological, legal and scientific practices when re-introductions are attempted. Opinions differ on the advisability of re-introductions but the Code assumes that a well thought-out introduction programme does have a useful role in conservation and brings together much information on this matter.

The Surveys Officer reported that the final report on the Swallowtail survey in 1984 has been delayed, and that there is no further news on the re-introduction of the Large blue.

Colin Hart

OF THE CONSERVATION COMMITTEE

Committee work and representation

The Committee met on 12th May 1985 and sent representatives to all the JCCBI meetings which took place during the year. Following the previous year's heavy load of paperwork which was generated by the drafting of amendments to the 1981 Wildlife and Countryside Act, we saw one very welcome change to the Act: the closing of the "three-month loophole" in the clauses relating to sites of special scientific interest. This had allowed some landowners to damage or

destroy the wildlife value of SSSI's, a problem which we had foreseen when the original bill was drafted. We also foresaw (but failed to forestall) several major problems regarding species protection, and it is not surprising to see that people are now beginning to appreciate the implications of a law which makes the possessor of a specimen of a listed species guilty until proved innocent. Neither is it surprising that the disproportionate attention paid to collecting *vis-à-vis* habitat destruction is having its effects on public opinion.

The amendments to the Act did not include any of our reiterated suggestions on species protection, and the SSSI loophole amendment was our main source of cheer. A very useful amendment which succumbed to pressure from the corridors of power was a clause which would have imposed on the Ministry of Agriculture, Food and Fisheries a duty to make conservation a positive objective. A similar clause relating to the Forestry Commission was, however, approved.

It is good to report some useful progress with another of the items mentioned in the 1984 report. This was our move to help improve the day-to-day working of the JCCBI and to encourage the co-operation of the constituent bodies represented on that committee. Our views met with general agreement and one of our suggested options was chosen; the formation of an executive sub-committee. This new group is convened by Dr Paul Whalley of the Royal Entomological Society, Dr Michael Morris, also of the RES, is Secretary of both JCCBI and sub-committee. Drs Ian McLean and Martin Warren of the NCC, Dr I. M. White of the RES, Mr Colin Hart (AES) and Dr David Lonsdale (ICN Editor) are the remaining members. The achievement is very much an administrative one at present but we look forward to some progress "on the Ground". In particular it is hoped that the executive sub-committee will be able to respond quickly to problems arising with individual sites and species. AES members are, of course, a major source of information on such matters.

Another of our concerns has been trading in vulnerable species, a matter which has cropped up in relation to AES Exhibitions. We felt the need to spell out more clearly our policy on trading in certain species. Accordingly the AES Council, with our recommendation, has decided to allow trading in certain butterfly species only in cases where the trader has certified, under licence, that the stock was captive-bred. There is, of course, a total ban on any activity which would infringe the 1981 Act.

Publications and exhibits

At the time of writing, Insect Conservation News No. 12 has still not appeared, and this unfortunately represents a decline in publication frequency. This is largely due to personal and professional pressures on the present writer, but they would have much less impact if more articles for inclusion in ICN were offered rather than written by the editor himself! In accordance with our policy of maximum co-operation with other organisations, we have suggested the possibility that the JCCBI might consider taking over responsibility for ICN in the hope that resources could thus be made available for an improved format and circulation.

Our stand at the AES Exhibition was a little less adventurous than some of our previous efforts, being a display of the various ways in which we further the cause, but it was well received. We also mounted a display at a show at the Queen Elizabeth Country Park in Hampshire, held to celebrate the silver jubilee of the Hants and Isle of Wight Naturalists' Trust.

Field meetings

We held two field meetings in 1985, through the efforts of Pete Holdaway, our meetings secretary; full reports appear in ICN. In May, we visited Betchworth Chalk Quarry, Surrey, with Colin Hart, and in June, John Cooper led a meeting at an ancient ridge-and-furrow pasture in Huntingdonshire. Both meetings were, as usual much enjoyed by all those in attendance.

Protection of individual sites

This activity remains one of our most important, and we have again organised studies of sites and made representations where appropriate. Details of these and other sites are given in Insect Conservation News.

David Lonsdale

OF THE INSECT BEHAVIOUR & ANT STUDY GROUP

Membership

Nineteen-eighty-four ended with a membership of 56 and after all renewals were gathered in, 1985 started with 44 members. The group increased its membership during the year by 12. This was accomplished in the following ways: Leicester Exhibition 1, and general advertising 11. Out of the 56 members at the end of 1985 there were 44 AES members, 4 Associate members, 2 Overseas members and 6 Subscribers. Membership-wise 1985 proved to be steady, and it is hoped that a steady growth can be accomplished during the year of 1986.

Publications

Again the group's Bulletin was successfully produced with four editions. As 1985 marked the group's 10th anniversary, the Bulletin had a new style of front cover which was well-received.

A continuation of the first guide was prepared and scheduled for sale in early 1986.

It proved to be a happy year for the AES marking their 50 years of existence and the IBASG marking its ten years of existence. The IBASG along the lines of informing AES readers of its ten years of existence prepared an article for inclusion in the AES *Bulletin*. Unfortunately due to a large back log of articles, this article, along with 20 other pages of matter, had to be omitted and was placed for publication in the February 1986 issue. This I hope will explain to readers why this article appears much later than would be expected.

Meetings

The year started with the Leicester Exhibition where Malcolm Parsons allotted some space on his tables. Once again the group enjoyed a well-run Exhibition/Fair with much interest in the group's live display of ants. The group's guide on *How to Keep Ants* sold well.

The next meeting that the group attended was the AES AGM where Malcolm Parsons presented the Annual Report.

On 11th May 1985 the IBASG held its Annual General Meeting in the rooms of the Royal Entomological Society. On the day six people attended with results of the meeting appearing in the May Newsletter.

The field meetings for the summer season were planned to cover three sites. Due to unforeseen circumstances one of the meetings had to be cancelled. Because 1985 was our 10th Anniversary a special field meeting was arranged and open to all group members to attend. On 1st June the group held its special meeting at the Living World where 13 people attended. This meeting consisted of a free packed lunch, a free visit over the site of the Living World which proved to be most interesting and to round the day off the rangers of the Seven Sisters Country Park kindly guided the group around the Park.

Members who attended this meeting thoroughly enjoyed the whole day with the many attractions of the Living World site.

The second meeting of the year was held at Ranmoor Common on 25th August. This meeting was attended by four members. It was unfortunate that the weather prior to the meeting had been particularly poor and this was reflected in the day's sightings.

The final meeting of the year was the AES Annual Exhibition. The IBASG's Exhibit saw many of the group's membership visit the group's display and many of the day's visitors showed much interest in the group's displays.

Badges

As 1985 was marking the group's 10th year it was decided to make a special item for all members to receive. Taking finances into account it was decided at the 1985 AGM to produce a 10th Anniversary Badge which would be given to members free of charge. In September prior to the AES Exhibition the badges were made available and sent out to all members.

In conclusion 1985 marked a unique stepping-stone in the IBASG's future. With 1985's happenings the group looks forward to 1986 with eager anticipation.

Malcolm Parsons
Hon. Sec.

OF THE EXOTIC ENTOMOLOGY GROUP

In 1985 membership figures reached 262 which was slightly up on the 1984 figure. With both general production difficulties and a lack of material we only managed to produce three newsletters during the year. This was compensated for, however, by the inclusion of our first colour photograph and extra pages of black and white pictures in the combined autumn/winter newsletter.

The Monthly Information Sheet goes from strength to strength in terms of the number of advertisements being sent in. However, printing delays arose which made some of the issues appear later than anticipated. Dave Moon resigned as MIS advertisement editor and I have now taken on the job, together with the printing, and this should overcome the past production difficulties. We are grateful to Dave for building up the MIS over the last two years.

A membership survey taken with the renewal of subscriptions revealed a demand for meetings which led to arrangements being made with Stratford Butterfly Farm for a Group visit. Unfortunately this met with complete lack of interest and of the handful booking places only two actually turned up on the day. It is now doubtful as to whether we will arrange such meetings in the future.

There was a good turn-out of members for the AES Annual Exhibition and we were grateful to be given a prime site on the ground floor with plenty of room for all. Long may this continue!

Chris Esbacher
Secretary and Treasurer

LETTER TO THE EDITOR

Dear Sir,

'Stung' would be too strong a word. Let's say I feel gently 'prodded' into writing, partly in response to Dr Clive Betts' somewhat emotive correspondence on the commercial aspects of the 1985 AES Exhibition (AES *Bulletin* 45: 79/80) and partly because I am quite tired of the growing anti-collecting lobby having the floor *all* the time.

It's an unfortunate human trait that those who have strongly-held views are often blinkered to the fact that there is another side to the subject or even some 'middle ground'. Because what they see is not in accord with their own views then everyone else is wrong. We have come a long way from the days when vast collections were amassed by those who could afford them, where buying, selling and exchanging were synonymous with collecting and this was all acceptable. We are now in an age where to be a collector is in some circles *persona non grata* and to be a dealer is absolutely taboo.

It is easy to forget that amateurs and collectors have amassed much of our present entomological knowledge and that some of the early collections form the basis of our museum collections. Well, amateurs and collectors still have something to contribute and yet are expected to bear the brunt of the conservationists' and "do-gooders'" ill will. Nor is this ill will confined to verbal attacks. I recall being on the receiving end of a good telling off from a rather unpleasant German lady in Delphi a few years ago; I found subsequently that she had also done a fair job of scratching the paint on my new car. On another occasion, on the outskirts of Kathmandu, an old lady tried to take my net off me and, having failed to do so, proceeded to pelt me with house bricks! However, I digress!

Not *all* collectors rush around gleefully sticking pins through the thorax of every insect they come across and whilst it is certainly true that some do commit excesses, it is unfair therefore to put all collectors in the same category.

In the event that it is not already obvious, I should tell you that I am a collector and that I don't feel the least bit ashamed. It is something which has given me an enormous amount of pleasure during the last 20 years and has taken me over much of the globe; I have published articles and observations in a number of entomological journals and these have hopefully been of some interest to others. Due to family pressure and a new and developing interest in insect photography I have recently decided to dispose of my collection and I suppose that this — horror of horrors — also makes me a dealer. Having now attended two 'exhibitions' this year I can tell you that, although there are undoubtedly some professional dealers present, a large number of traders are ordinary people who sell some of their spares to offset travelling costs or who buy specimens which they may never be able to afford to travel to see themselves. They are people with a very keen interest and a wealth of knowledge of their chosen hobby; among their number are probably some of the professional entomologists of tomorrow.

In view of the large number of AES members that attend the annual exhibition and other similar events throughout the country, it seems that members *do* require a commercial service and to believe otherwise is naive.

So, I shall be there at the 1986 Annual Exhibition selling some butterflies, chatting to old friends and exhibiting some photographs. I'll do a deal with you Dr Betts. I promise to be neither frenzied nor frantic, if you promise to contain your shock, disappointment, disgust, anger and horror!!

Yours sincerely,
John Tennent, BEM, FRES. (7756)

HANDLE ALL YOUR CHEMICALS WITH CAUTION

They could seriously damage your health

by Robert Murdock (5718)

I should like to comment on the article last August *Are Our Mothballs Harming Us?* by W. J. Durrant (*Bulletin* 45:150). Having worked in close contact with pure chemicals for nearly twenty years, I take the view that *ALL* chemicals should be handled with caution.

Over the last few years awareness of chemical hazards has increased with new safety requirements. More information has become available through increased animal testing and hazards have become more obvious through labelling regulations. However, comprehensive information is not available for all chemicals. Also, products containing mixtures of chemicals do not, I believe, have to carry such explicit warning labels as pure chemicals. Even legally required hazard labels cannot state hazards

in any detail and therefore may not be considered helpful (eg. *p*-dichlorobenzene, HARMFUL, as noted by the editor). In addition, detailed biochemical data, when available, are usually open to interpretation. Some suppliers give additional information which can be alarming (eg. CANCER SUSPECT AGENT, for carbon tetrachloride and chloroform) but those with no such warning should not be considered safe; it may only be the case that they have not been so fully investigated.

In handling *all* chemicals I avoid as far as possible any skin contact or inhalation. Flammable materials naturally provide additional hazards.

THE HIDDEN MENACE OF PDB

by Roderick R. Irwin (1220)

I should like to expand upon the Editor's reply to W. J. Durrant's query in the August *Bulletin* about the hazards of paradichlorobenzene (PDB). In the *News of the Lepidopterists' Society*, 1983, pp.43-45 is a long and strongly cautionary letter on this subject by Noel McFarland, which I take the liberty of abstracting.

McFarland researched the topic extensively as a result of PDB-related health problems he suffered in his teen-age and later years and which were exacerbated by exposure to naphthalene while he was Assistant Curator of Insects at the South Australian Museum at Adelaide. He states that he had been "warned (by medical doctors, chemists, physiologists and toxicologists), that PDB is a *cumulative* liver poison; each additional exposure translates into just that much more damage done. Naphthalene has been described in a similar way." He was diagnosed as having "naphthalene-induced toxic hepatitis" and advised by his doctor to remove himself from exposure to this chemical. He indicates that the damage *may* be gradually reversible over a considerable period of time if measures to maintain good general health are undertaken after removal from exposure.

McFarland also mentions two documented *deaths* of workers at the Bonn Museum in West Germany, as well as that of the well-known American lepidopterist John Sperry and a case of severe cirrhosis of the liver in still another worker, all of which were traced to PDB. He suggests that in view of the liver's role as a detoxifying organ, anything that might weaken its ability to perform its function may eventually lessen the body's ability to combat cancer. Moreover, these two substances have been shown to induce the formation of cataracts of the eye.

It appears from this that PDB and naphthalene are anything but innocuous, and while admittedly the more extreme effects of the chemicals befell professional workers who underwent prolonged daily

exposure to heavy concentrations of them, still it behoves all who use them to be cognisant of the very real health threat they pose. As an alternative to their use, McFarland suggests *periodic* fumigation, possibly with ethyl acetate in small, deep tins in each drawer, and done when one may be away for a short time afterwards.

MEETING DATES TO NOTE

Enter them in your diary NOW

The Annual General Meeting of the Society will be held on Saturday 11th April at 2.00 pm in the rooms of the Royal Entomological Society, 41 Queens Gate, London SW7.

The Ninth Midland Entomological Fair will be held at the Granby Halls, Leicester, on Sunday 5th April from 11.00 am to 5.00 pm. Enquiries to Jack Harris (0445) 46310.

The North London Entomological Fair will be held at Picketts Lock Centre, Edmonton, London N9 on Sunday, 31st May from 11.00 am to 4.30 pm. Enquiries to N.L.E.F. 01-363 7988.

The Annual Exhibition of the Society will be held as usual in Hounslow Civic Centre on Saturday October 10th. A special display of Stick insects (Phasmidae) will be given by Paul Brock.

JEALOTS HILL PHOTOGRAPHIC COMPETITION

The subject this year will be to show "INSECT(S) FEEDING" and all entries must be received by August 31st.

NEW BOOKS ANNOUNCED

by The Editor

I feel it is worth commenting on the present extraordinary position in the publishing world, in which the situation has arisen where, in not a few instances, it is now cheaper to have books handbound than it is to have the binding mass-produced by machine. A noted example of this arises in the case of some recent zoological books published by Academic Press. I give the following as examples:—

Principles of Physiological measurement

Hardback £49.50. Paperback £20.00. Therefore binding cost £29.50.

The Atlantic Alcidae

Hardback £35.00. Paperback £17.50. Therefore binding cost £17.50.

Venoms of the hymenoptera

Hardback £76.00. Paperback £39.95. Therefore binding cost £36.05.

Now the cost of having a paperback book handbound as a hardback is from £10 - £15. Admitted that unless a binder is near to hand then postal costs will have to be added to this. There are even binders who will do it for less and for the sum of £36.05 I could get a fine binding in half leather. Perhaps the most extraordinary thing about the above price differentials is that there are very many books on the market in equally good hardback bindings at a total price less than the cost differentials quoted above.

There are also those who are handy with their hands and simple book-binding is well within the capabilities of the average "Do-it-yourselfer". Indeed I already know of several members (myself included!) who do just this. The examples given above do seem to be very extreme price differentials and it is more common to find a difference of from £4 - £10. In these cases perhaps not worth while to employ a professional, but still worth "doing-it-yourself".

I wonder if perhaps the time has not come to revert to the good old-fashioned method of publishing books in "sheets" (i.e. completely unbound) so that the purchaser may have his library bound up uniformly to his own requirements and taste.

Only the following books of entomological interest have come to my notice recently, two of which are very old friends.

Pest control for bees: a manual and directory for the tropics and subtropics by M. Adey, P. Walker and P. T. Walker. 224 pp, 120 line drawings. Price (paperback) £14 direct from IBRA, Hill House, Gerrards Cross, Bucks SL9 0NR.

Bees and other insects are essential to pollinate many crop plants but numerous pests can also attack the crops necessitating the application of insecticides which, if applied at the wrong time, or are too persistent, will also kill the pollinators with disastrous results on yield. This book provides a practical guide as to how crop pests may be controlled without also killing the bees and also describes the steps that beekeepers may take to protect their valuable animals from being killed by injudicious use of insecticides by others. There are recommendations to pesticide manufacturers and traders and a summary is given of the general safety rules for handling and applying pesticides. Also given are ways in which governments can try and ensure that bees are not carelessly killed. A list of pesticides graded according to their toxicity to bees is given.

Although concerned primarily with tropical and subtropical crops of which some 85 examples are given, the general information in this book also applies to other regions and although designed as a manual for those actually involved and concerned with the problem its advice is generally applicable and draws attention to what has become an ever-increasing problem, crop loss, not from pests eating it, but from pollination failure due to pest control measures having killed off the good guys as well as the baddies.

An indexed list of British butterflies and moths by J. D. Bradley and D. S. Fletcher. A5; pp. vi + 119; paperback. Kedleston Press, Orpington 1986. Price £6.00 (or £7.00 by post from the senior author, 53 Osterley Road, Isleworth, Middx TW7 4PW).

My first reaction to this book had nothing to do with its merits or otherwise, but started a train of thought which seriously made me query as to just why have I (and others) been worrying about species becoming extinct. This heretic thought was brought about by the number of species listed. Two thousand four hundred and ninety-five. To me this figure meant that there has been a net *increase* of our recorded lepidoptera of no less than 20% since I started collecting, which works out at eight or nine species per year over the past 50 years. A closer perusal of the book revealed this figure to be an understatement, for there are several bis numbers listed and the actual total is something over the 2,500 mark. This list confirms then that our gains have been far, far greater than our extinctions over the same period. For the statistically minded:—

In 1938 Heslop listed 2070 species.

In 1946 Kloet and Hincks listed 2233 species.

In 1963 Heslop listed 2405 species.

In 1986 Bradley and Fletcher list over 2500 species.

In the 1949 Guide to the smaller lepidoptera 1375 micros were listed.

In the 1982 Guide to the smaller lepidoptera 1488 micros are listed.

While it is difficult to do precise comparisons due to the differing criteria used for listing (or omitting) a species, all the above works do include both extinct, adventitious and migrant species. What is so clear is the steady increase that has taken place, even if (and this is what this work only indicates in part) many of them remain rare, local or adventitious.

In my capacity as editor of the *Bulletin* I find I get more complaints by *omitting* English names than I do of wasting space if I include them and a close study of the changes of nomenclature in this list will show that there is far more stability in the English names of moths than there is in the Linnean scientific binomial classification system.

While I have resigned myself to the fact that for some publications the older printing technologies have priced themselves out of the market, the newer ones can do a lot better than this. Clearly set on a wordprocessor, why oh why do we have to have all that underlining, as if this was a manuscript marked up for typesetting? Even the cheaper printers for processor output can now manage *italics* and some of them even bold type as well. The absolute uniform typeface used is both difficult to follow and a strain on the eyes. A more serious criticism, however, is the variable quality of the printing. On some of the pages, 61, 79, for instance, it is very bad indeed; like a poor Xerox with parts of the lettering not printed at all. In all fairness it is well bound in an attractive card cover. It does seem that specialist items like this must either be of this poor quality or so expensive that no-one but a few libraries can afford them.

Moths of the British Isles by Richard South. F. Warne & Co. 2 vols, 1980 edition. Price £6.50.

This work of course needs no introduction and has now been in print for no less than 80 years. An excellent innings but in spite of updatings now superseded by Bernard Skinner's *Colour identification guide to moths of the British Isles*. Readers may be unaware that Messrs Warne have now ceased trading and therefore it is unlikely that any of their world famous "Wayside and Woodland" series, to which these volumes belong, will ever be reprinted. Their demise is our gain, for the two volumes of the 1980 and last edition are now being remaindered for a third of their original cost. If any members have difficulty in finding Copies at this price, they should be available at Davids Bookshop, St. Edwards Passage, Cambridge CB2 3PJ, but postage will of course be extra. In case they may be sold out, however, it would be advisable to phone first. Their number is (0223) 354619.

Colour identification guide to the butterflies of the British Isles by T. G. Howarth.

Although the last edition of this was only published two years ago by Viking Press, this work is also to be remaindered at around the £7 - £8 mark, well below its original price and in cases of difficulty may also be obtained from Messrs Davids Bookshop. For a review of this book, readers are referred to *Bulletin* Vol. 44. page 32.

Breeding Butterflies and Moths by Ekkehard Friedrich.

When our reviewer of the French translation of this work (see *Bulletin* Vol. 42: 171-172) remarked "what a pity it is that we have not had an enterprising publisher do us an English version" we little thought that he would be taken at his word. Well, he has, and here it is. The real bonus, however, is that it has been published by the husband and wife team of Basil and Annette Harley who really have established themselves as the doyens of entomological publishing at the quality end of the market since they are sticklers for both scientific accuracy and quality of production. This English edition has had the advantage of being translated by Steven Whitebread, a fluent linguist as well as an Entomologist. In collaboration with Herr Friedrich, it has been much augmented and updated from the last German edition. Published last December it breaks new ground in being devoted entirely to the breeding of lepidoptera, concentrates particularly on difficult species and gives all aspects of the subject and many examples of individual species, including micros, and is particularly strong on geometrids. It is also the first book (other than expensive academic professional ones) to give details of the use and availability of artificial diets suited to amateur use. As ever from this publisher it is exceedingly well produced and, being of similar size to their well-known *Moths and butterflies of Great Britain and Ireland*, sits comfortably alongside that series on the bookshelf where it will be readily to hand to complement the information in those volumes. Four years on, the hardback is only the then price of the poor quality (see above mentioned review) French paperback, so, expanded and updated, it represents extraordinarily good value. (See also Book Reviews.)

Moths and butterflies of Great Britain and Ireland. We are pleased to announce that Volumes 1, 9 and 10 of this series have now appeared in paperback at the price of £24.95 and that Volume 2 in the same format is due for publication in late spring. Volume 7, Hesperidae to Thyatiridae, (which means all the butterflies will be in it) is due in the hardback edition in June. A paperback of this Volume will follow in two years' time.

After a bad start this series was saved from oblivion by Messrs Harley Books, and since they took over it has not only gone from strength to strength, but publication has speeded up and we understand that all the remaining Volumes are now initiated and under way. Messrs Harley Books are to be congratulated on their decision to make a cheaper edition of this scholarly and essential work available which should now place it within the means of the younger and less affluent members of the lepidopterological fraternity. For former reviews of these Volumes reference should be made to the *Bulletin* as follows:—

Volume 1. November 1976 page 155.

Volume 9. May 1980 page 70.

Volume 10. August 1984 page 124.

Handbook of insect collecting by Courtenay Smithers. Small 4to, pp.120, illustrated. David & Charles, Newton Abbot, 1981. Price (hardback) in London remaindered shops £4.00.

Hardly a recent book but this must be about the most un-advertised book of the century, having been published six years ago. Only one copy appeared in the Cambridge area and I did not find it at the time elsewhere even when looked for. At the end of last year it suddenly appeared being remaindered in London shops. It is a book very well worth having. Written by an Australian it covers all orders of insect and all aspects of collecting, preserving and rearing them. While some of the aspects may have a "down under" flavour, they are well worth considering and the book is packed with useful facts, illustrations and formulae as well as having a key to the various orders.



BUTTERFLY COLLECTING TRIPS TO COSTA RICA

Messrs Transworld Butterfly Company are now organized to accommodate visitors to collect, photograph and study butterflies, moths or birds in this trouble-free Central American tropical paradise. Accommodation is limited to six persons at any one time and is in a luxurious Spanish style ranch. Their programme at £200 per person per week includes full board and accommodation, transport and field trip. Reduced air fares from London have been arranged. Costa Rica has over 1500 species of butterflies and 9000 of moths. An eight-page brochure is available and anyone interested should write to them at Apartado 6951, San Jose, Costa Rica, Central America.

BUTTERFLY-TRAPPING IN FINLAND

by Leigh Plester (2968)

(Continued from Vol. 45, p. 265)

My traps have spent weeks in the Taiga, or North European coniferous forest, hanging from trees at varying heights. To hoist a trap high up into a tree, you simply throw a stick over the selected branch, remembering to tie a line to the stick before releasing it, then merely haul the trap up into place. Make sure the branch you choose is not providing a meal for wood-boring beetles or your trap's sojourns aloft may be a short one. My first trap, thanks to a weakened birch tree branch, finally plummeted to earth on 1 June 1978. Given an appropriately abstract title, the resulting pile of sticks and shredded netting could have taken prizes at modern art exhibitions.

My fourth trap has white netting sides. A 1984 model, this failed to catch anything of value to me although, to be fair, a dipterist might have considered the fry swarming therein a rare treat.

Our tropical correspondent reported having trouble with bushbabies tearing open the netting at dusk in order to polish off the juicy-bodied *Charaxes* roosting there. With today's inflated prices on "exotics" the poor fellow must have been losing a fortune! My own trap enemies are limited to great-tits, which have occasionally experimentally pecked holes in the netting, and the ubiquitous, hard-working wasps. I share an old wooden house with half a dozen nestfuls of these insects every summer and the way they take to the traps one would think they were paying the rent. Fortunately, drunken wasps tend to be sleepy rather than violent.

Over the years I have had a certain degree of success with these traps. Table 1 shows the results to date. Note that night-flying moths have also come to them. The hawkmoths are no surprise as five species breed wild in my so-called garden and along the edges of the adjacent forest.

There is a second, cheaper method of attracting Lepidoptera which does not involve the complicated business of making traps. This is an updated version of sugaring" and for it you simply obtain a sheet of polystyrene foam around an inch thick and then cut it into oblongs half the size of your hand or larger. Thread thin cord through one edge, or better still make hooks from soft wire (watch for sharp ends!). These pads are dipped into a fruity mixture and are best kept in a bucket with the mixture at the bottom. When not in use, the bucket can be covered with polythene. Naturally the brew goes mouldy after a time but this will not deter butterflies and moths and it will provide you with tax-free alcohol.

A Small tortoiseshell on a "Juice Pod". Photo by Leigh Plester (2968).



In the spring and summer of 1984 I had about twenty of these pads hanging on the wall of the ancient barn just across the yard, on the front wall of the house (facing south), and next to the porch door (also facing south), often placing them next to the butterfly traps. Table 2 indicates what I caught. As an alternative to the messy, laborious business of sugaring tree trunks or palings, this method is excellent. The soaked pads can be hung up, moved about, replenished, and so on, without any trouble. Try shifting an oak tree a few yards and you will understand what I mean.

Finally, a surprisingly large number of people appear to have made, and successfully used, "juice pods" of the type I wrote about in *Bull. amat. Ent. Soc.* 34: 73-76 (1975). I even had requests for reprints from researchers living in Eastern Europe. This was a reminder of the good one can do by passing on new techniques through the medium of the *Bulletin*, and you never know, the next person may well come up with a better version than yours!

Specimens captured at KANGASALA (61°35'N., 24°00'E.) in 1973

N. antiopa 1 ind. 7 Aug. and 13 Aug.

Specimens captured at VIROJOKI (60°35'N., 27°40'E.) in 1975:

N. antiopa 1 ind. 14 May

Specimens captured at SIIVIKKALA (61°32'N., 23°40'E.) in 1984:

Trap location	Date	Species	No.	Day	Night
House	24 May	<i>N. antiopa</i>	1	x	
Door	1 Jun	<i>P. elpenor</i>	2		x
Barn	3 June	<i>P. c-album</i>	1	x	
Door	3 Jun	<i>P. c-album</i>	1	x	
Door	3 Jun	<i>P. elpenor</i>	1		x
Door	4 Jun	<i>P. elpenor</i>	1		x
Door	5 Jun	<i>P. elpenor</i>	1		x
Barn	7 Jun	<i>P. c-album</i>	1	x	
Door	8 Jun	<i>P. elpenor</i>	2		x
Door	11 Jun	<i>P. elpenor</i>	1		x
Door	13 Jun	<i>P. elpenor</i>	1		x
Door	27 Jun	<i>T. batis</i>	1		x
Door	to 30 Jun	<i>T. batis</i>	2		x
Door	1st wk July	Noctuids	Several		x
Door	28 Jul	<i>P. c-album</i>	2	x	
Barn	29 Jul	<i>P. c-album</i>	1	x	
Door	5 Aug	<i>P. c-album</i>	1	x	
Door	10 Aug	<i>P. c-album</i>	1	x	
Door	10 Aug	<i>N. antiopa</i>	1	x	
House	10 Aug	<i>N. antiopa</i>	1	x	
House	11 Aug	<i>N. antiopa</i>	1	x	
House	17 Aug	<i>N. antiopa</i>	5	x	
House	24 Aug	<i>N. antiopa</i>	4	x	

Table 1: Lepidoptera taken in butterfly traps in three separate years.

Key: *N. antiopa* = Camberwell Beauty, *P. c-album* = Comma, *P. elpenor* = Elephant hawk, *T. batis* = Peach blossom.

Specimens observed at bait in 1983 at Siivikkal (61°32' N., 23°40' E.):

Date	Species	No.
13 Aug	<i>V. atalanta</i>	1
21 Aug	<i>V. atalanta</i>	4

Specimens observed at bait in 1984

Date	Species	No.	Locality
17 Aug	<i>N. io</i>	1	Siivikkala
18 Aug	<i>N. antiopa</i>	3	Länsi-Teisko (61°45' N., 23°40' E.)
19 Aug	<i>N. antiopa</i>	3	Siivikkala
20 Aug	<i>N. antiopa</i>	4	Siivikkala
28 Aug	<i>A. urticae</i>	2	Siivikkala

Table 2: Selection of specimens observed at bait. Note that this method requires constant observation if a proper analysis of the results is envisaged.

MOTHS ON LIGHTED WINDOWS

The added attraction of frosted glass

by Jan Koryszko (6089)

It is a well-known fact that a number of moths can be captured at lighted shop windows and at street lamps. I often, too, leave a light on at home for this purpose and for some time I have noticed that my bathroom window seems to get the most visits from the moths and this is the window that has frosted glass in it. The lightbulb in the bathroom (which is on the ground floor) is only 100w, but it attracts more moths than any other window in the house, all of which have a more powerful 150w behind them in the room. I think that the reason for this is due to the frosted glass. The light appears to be broken up into small beads of bright light on the window and this may well be the attraction. Perhaps other moth collectors may find this information useful.

I have taken the following species at this window which I have not found elsewhere in the Meir area of Staffordshire: Feathered thorn (*Colotis pennaria*); Svennsson's copper underwing (*Amphipyra berbera svenssoni*); November moth (*Epirrita dilutata*). Perhaps an even more powerful bulb in my bathroom would bring in even further records of moths.

FEATURED MUSEUMS NUMBER FIVE.**THE BOOTH MUSEUM OF NATURAL HISTORY, BRIGHTON.**

by Dr Gerald Legg

The Booth Museum of Birds, as it was then known, was built for Mr Edward Thomas Booth (1840-90) in the grounds of his house in Dyke Road, Brighton, in 1874. This building was to display Booth's examples of all the British birds in all their stages. This rather ambitious project was not completely fulfilled; however, Booth did manage to collect over two thirds of the species which he mounted in "natural" dioramas, a hitherto unknown practice. As a man of independent means he was able to avidly pursue his love of field sports and natural history, and birds in particular. Before setting up a bird in a case, details of where it was "collected" were made and the case background constructed to an exacting plan in an attempt to duplicate the original site. As well as housing the unique scientific and educational collection of birds, many of the cases themselves are works of art and demonstrate the highest levels of skill of the taxidermist.

Following his death, the Museum was given to the Town of Brighton and formed part of the Museums and Art Gallery Department. Other natural history collections were in store and on display at the Museum and Art Gallery in Church Street, but during recent years these collections have now all been transferred to the Booth. During the 1930s an active entomological interest by A. F. Brazenor resulted in the accumulation of many fine collections at the Booth. As a consequence of the non-avian additions to the Booth collections in 1974 the Museum was renamed the Booth Museum of Natural History.

The natural history collections are extremely varied and form the largest collection in the south-east of England outside the National Museum. All aspects are represented including bacteria, plants, insects, crustaceans, echinoderms, molluscs, bryozoans, vertebrates (birds, reptiles, mammals, amphibians: skeletons and skins), rocks, minerals, fossils and many more.

The entomological collections are in the care of one full time Keeper of Biology and consist of 400,000 specimens. A great deal of work still needs to be done to sort and properly store many of the specimens; however, the collection has come a long way since 1972 when it was at considerable risk. During World War II about 40,000 specimens from the Joicey Collection (ex the Hill Museum) were stored in large cardboard trays with loosely fitting lids. As a consequence about three-quarters of these were extensively damaged by *Anthrenus*. Other collections suffered a similar fate to a greater or lesser extent. In the early 1970s with the appointment of a Principal Keeper of Natural Sciences, Senior Technical Officer, Keeper of Biology and Keeper of Geology,

high priority was given to "stopping the rot". This has largely been done and now efforts are concentrated upon reorganisation and standardisation of the storage systems. It is important to note that not all the insect collections were damaged prior to 1970. The very important Hall, Tonge, "General" and some other collections were fortunately housed in high quality cabinets and received the attention of an attendant and his rigorous use of naphthalene.

With the appointment of an entomologist as Keeper of Biology the collections have been extensively sorted, catalogued, etc. In addition the acquisition policy has enabled the Museum to add to the existing material, something which it continues to do. Acquisitions are not made in an "accept anything" manner, but rather collections or specimens which have relevance to the existing material are sought either to boost specific holdings or fill gaps where weaknesses occur.

An extensive library together with laboratories and other services support the collections which are used for display, identification, research, teaching, education etc. The importance of the presence of data with specimens can never be overstressed and the large proportion of the collections contain data-rich material. Such material is used to provide important and useful information on the distribution of species. Published records of species, distributions etc are backed up by the presence of "voucher" specimens which form part of the collection. Other more significant specimens are those used in the definitive description of a taxon, in our case particularly species. Such specimens are the "types" and are of prime importance. Any future taxonomic work on a species must always refer to an original "type". In the region of 650 types are present within the collection together with many more "figured", "cited" and "referred" species.

In addition to the very extensive collections formed by A. E. Tonge, the Museum also has prints of his famous photographs of insect eggs, but not, unfortunately, the negatives.

Details of the insect collections are given below.

<i>Material</i>	<i>Abbreviation</i>	<i>Quantity</i>	<i>Figured/Type/Voucher</i>		
BRITISH					
Macrolepidoptera	BL	85,000	+	?	+
Microlepidoptera	ML	5,000			+
Diptera	D	1,500			+
Coleoptera	C	4,000			+
Hymenoptera	H	2,500			+
Odonata	O	250			+
Hemiptera	HE	500			
Other	M	500			

Specimens quoted are approximate numbers; C = Cabinets, D = Drawers.

FOREIGN

Macrolepidoptera	FL	300,000	+	+	+
Coleoptera	FC	500			
Other	FM	1,000			
		<hr/> 400,750 <hr/>			

<i>Collection/Collector</i>	<i>Material (Abbreviation)</i>	<i>Date</i>	<i>Quantity</i>
BABCOCK	M/C/D	1920-30	2C
BARNEY, R. W. (Rev.)	FL	1930-	4D
BARTON	FM	1930	150
BENNETT, H. L. (Maj.)	FL	1972-82	115
BRENNEN, J. F.	BL	1900-	6D
BRAZENOR, A. F.	C/D/O	1936-40	20D
BROWN (Messrs)	FL	1969-72	24D
BURGESS-SOPP, E. T.	C/M	19	25D
BURT	FL	1930	250D
CRABBE, A. B. (Maj.)	BL/FL	1910-30	8D
CRAIGE, C. (Miss)	FL	1920	5D
CRIBB, H. J.	C	1900-1920	4C
CURRIE, D. (Dr)	FL	1959-64	1,000
DALGLIESH, J. G.	M	1930-	4D
DE RHE, Philippe	FL	19	6C
DUKE, A. J.	FL	1930-	3D
EDWARD	BL	1950-60	4D
EEDEN, W. Van (Capt.)	FM/FC	1920/30	5D
ELLIOT	FC/C	19—	3D
GORING-BRIDGER, H. C.	FC/FM	1920-	10D
HAIGE, N. S.	FL	1930-	10D
HALL, A.	BL/FL	1896-1939	30C
HENRY, G. M.	FL/BL/FM	1910-46	6D
HUGGEN, E. F. (Sqdn Leader)	BL/FL	1920-45	220
HILLMAN, S. D.	BL	1930-1960	3C
HILLMAN, T. S.	C/H/HE	1880-90	1,200
HOMBUCKLE (Miss)	BL	1880-	12D
JACOMBE, M. S.	FL	1900	3D
JAMES, R. E.	FM	1920	3D
JENNER	BL/C/M	1870-90	6C
JOICEY	BL/FL	1850-	300D
KERSHAW, S. H. (Col.)	FL	1930-	9D
LEGG, G. (Dr)	FL/FM/FC	1970-74	2C
MESSENGER, J. L.	FL	1937-45	800
PANTLING, M.	FL	1960-70	350
PICKETT, A. H.	FL	1930	150
PRATT, C. R.	BL	1968-84	4D
ROMER, H. G.	BL	1920-40	14D

SALMON, (Mrs)	BL	1950	2D
SAUNDERS, D. F.	BL	1950-55	45D
SAVAGE, L. E.	BL	1940-70	20D
SMART, F. G.	BL	1930	7D
SMART, P.	FL	1950-80	500
SMITH, C. (Capt.)	FL	1900	70
STAFFORD, A. E.	BL	1920-60	84D
TAYLOR	FL	1930-	100
TONGE, A. E.	BL/C/D/H/M	1810/1936	190D
VICK, V. & G.	BL	1920-30	4D
WALKER, H. H.	FL:	1920	24D
WARD, D.	BL	1930	11D
WONFOR, T. W. C.	BL	1860-	2C
ZOUCHE (Baroness)	BL/FL	1790-1800	200
The GENERAL COLLECTION	MIXED	1850-1984	20C

(including some of above but also many other collections)

Specimens quoted are approximate numbers; C = Cabinets, D = Drawers.

Visitors are welcome to use the collection and library under supervision. Study facilities can be provided with the provision of study space, microscopes and photocopying facilities.

Anyone interested in visiting the collection should contact the Museum by writing to the address above or telephoning Brighton (0273) 552586. Unfortunately, as with most museums, the reserve collection and study facilities are normally closed at weekends. However, special arrangements can be made for small parties who would like to visit the collection on Saturdays.

SPREAD OF THE LATTICED HEATH IN STAFFORDSHIRE

by Jan Koryszko (6089)

Since the late 1970s, the Latticed heath moth (*Semiothisa clathrata*) has started to spread from the extreme south and east of the county. In the *Atlas of the Lepidoptera of Staffordshire* by R. G. Warren, it was only recorded (on waste ground and railway embankments) from Wiginton (S. Swain); Walsall (T. E. C. Parker); Hanbury (R. G. Warren). In 1984 Mr Warren informed me of the spread of this species and said to keep a lookout for it. This I did and in 1986 I was pleased to see a specimen along a disused railway line at Gnosall and Tony Mellor reported it from Meaford. This seems to indicate that it may well turn up in other parts of the county and no doubt it is well worth looking out for and there are many suitable habitats in and around Meir, where I live.

THE COMMON NAMES: "LOUSE"/"LICE"

by C. Moreby (7548)

Some common names of animals have a habit of being applied to groups unrelated to their original designation. Thus "land *lobster*" for a species of stick insect, "stonefly" for an order of insects distinct from the true flies and "lucerne *flea*" for a species of springtail. And many more.

Nowhere has this occurred more frequently than with the lice.

The common name "louse" (plural: "lice") usually arouses in the lay person a sense of villification as something "small and nasty" secreting itself in small nooks and crevices usually connected with parasitism and diseases - to be avoided at all costs. As a result "louse" has been applied indiscriminately and ignorantly to any animal seeming to have these qualities, even to harmless animals (eg. woodlice).

This has led to popular accounts in the press, etc. using "louse" or "lice" on their own for animals distinct from the group of original reference (ie. the insect order Phthiraptera). For example, I have seen the Psocoptera referred to as "lice" when they should have been referred to as "bark lice", etc (see list below).

The name "louse", on its own, originally referred to the human louse (*Pediculus humanus* L.) but has since extended its term of reference to include all the species in the Phthiraptera.

The key to distinguishing Phthirapteran lice from "other animal" lice is the addition of a prefix to the noun "louse" or "lice" in the form of an adjective describing some quality of the animal in question (eg. crab louse — because its form superficially resembles a crab), or indicating the habitat where the animal lives (eg. fish louse, bird louse). But beware of possible confusion — lice do not parasitize crabs!

To further avoid confusion between Phthiraptera lice and others it is wise not to use "louse" or "lice" on their own, but to qualify the word and refer to the Phthiraptera as "true lice".

The following list of common names, in alphabetical order, uses "louse" as the noun. Names using "louse" as an adjective (eg. louse fly) are excluded. Also excluded are most of the Phthiraptera, comprising over 2500 species in the world, most with the adjective indicating the habitat (ie. the host) — eg. elephant louse, dog louse, etc. Only included in the list are those Phthirapteran names more commonly encountered by the lay person and amateur entomologist, or likely to occur in the non-specialist literature, or where confusion is likely to arise. All non-Phthirapteran names using "louse" are included.

ENTOMOLOGICAL

Common Name	Taxonomic Group
Bark louse	Psocoptera
Beaver louse	<i>Platypsyllus castoris</i> (Coleoptera, Leptinidae)
Bee louse	<i>Braula coeca</i> (Hymenoptera, Braulidae)
Bird louse	Phthiraptera
Biting louse	Phthiraptera (all species except Anoplura)
Body louse	<i>Pediculus h. humanus</i> (Phthiraptera, Anoplura)
Book louse	Psocoptera
Chewing louse	Phthiraptera (all species except Anoplura)
Clothes louse	<i>Pediculus h. humanus</i> (Phthiraptera, Anoplura)
Common louse of man	<i>Pediculus humanus</i> (Phthiraptera, Anoplura)
Crab louse	<i>Phthirus pubis</i> (Phthiraptera, Anoplura)
Dust louse	Psocoptera
Feather louse	Phthiraptera (all species on birds)
Head louse	<i>Pediculus humanus capitis</i> (Phthiraptera, Anoplura)
Hog louse (see also NON-ENTOMO- LOGICAL)	<i>Haematopinus suis</i> (Phthiraptera, Anoplura)
Human louse	<i>Pediculus humanus</i> (Phthiraptera, Anoplura)
Jumping plant louse	Homoptera (Psyllidae)
Plant louse	Homoptera (Aphidoidea)
Pubic louse	<i>Phthirus pubis</i> (Phthiraptera, Anoplura)
Shaft louse	<i>Menopon gallinae</i> (Phthiraptera, Menoponidae)
Sucking louse	Phthiraptera (Anoplura)
True louse	Phthiraptera
Vine louse	<i>Viteus vitifolii</i> (Homoptera, Phylloxeridae)
Wing louse	Phthiraptera (Phloptoridae)

NON-ENTOMOLOGICAL

Beach woodlouse	<i>Ligia oceanica</i> (Crustacea, Isopoda)
Carp louse	Crustacea (Branchiura)
Fish louse	Crustacea (Branchiura)
Hog Louse (see also ENTOMOLOGICAL)	<i>Asellus</i> sp. (Crustacea, Isopoda)
Whale louse	Cyamidae (Crustacea, Amphipoda)
Wood louse	Crustacea (Isopoda)

The above list is not intended to be exhaustive, but I would be interested to learn of any other common names using "louse" or "lice" readers have come across.

THE PSOCOPTERA OF WARWICKSHIRE

by C. Moreby (7548)

The Psocoptera are a group of insects not likely to attract the interest of many amateur entomologists because of their small size, lack of bright colours and "in situ" inconspicuousness compared with the major orders. Furthermore the expensive microscope and ancillary equipment required for successful identifications are sure to drain the pocket of the most ardent entomologist.

Yet the Psocoptera — or to use their common name "psocids" or "bark-lice" (the common names "booklice" and "dustlice" should more properly be used for those species occurring indoors) — are a fascinating group worthy of greater attention. There is plenty of scope to improve the knowledge of Britain's species of this understudied group — geographical distribution, life history and ecology. All are areas of study feasible for the amateur. Moreover, even though it is true good microscopes are expensive, are they much more expensive than the lepidopterist's light traps, cabinets and storage boxes?

About fifty of the ninety or so species on the British list occur naturally. Most occupy arboreal habitats on foliage or bark, but a few species occur on low vegetation, in litter or in domestic situations (eg. in pantries and food packets) where they feed on microflora, organic debris, yeasts, flour and similar material.

Probably the best field character for distinguishing Psocoptera from other insects is the bulbous postclypeous in the preantennal region of the head, a character that can be seen with the practised eye with a hand lens. Biting mouthparts distinguishes them more easily from the superficially similar Psyllid Homoptera which often live in the same kind of Habitat. Psocoptera also have long filiform antennae and two pairs of wings held roof-like over the abdomen (although in some species the wings are held flattened over the abdomen). There is often considerable wing variation ranging from macroptery to aptery, even within species. For example, in the common species *Mesopsocus unipunctatus* (Mueller) the males are macropterous while the females are apterous.

Psocoptera are collected by beating foliage, examining bark and other structures with the naked eye, sweeping low vegetation and grass and by using a Berlese funnel to extract the litter-frequenting species.

British species may be identified using New (1974), although one species has been added to the British list since that publication. For an introduction to the study of Psocoptera see New (1971).

Once species are identified accurately it is important to send all records to the local biological records centre.

The following is a list of species recorded from Warwickshire during 1983-4.

1. *Cerobasis guestfalicus* Kolbe
July. On foliage — yew.
2. *Liposcelis bostrychophileus* Badonnel.
August. In semolina packet.
3. *Caecilius burmeisteri* Brauer
July-August. On foliage — cedar, *Chamaecyparis*, yew.
4. *Caecilius flavidus* (Stephens)
July-October. Common on foliage — alder, beech, elder, hawthorn, holly, oak, rhododendron, sloe, sycamore.
5. *Graphopsocus cruciatus* (L.)
July-October. On foliage — hawthorn, holly, oak, rhododendron, *Rosa*, yew.
6. *Stenopsocus stigmaticus* (Imhoff & Labram)
July. On foliage — unidentified deciduous tree.
7. *Stenopsocus immaculatus* (Stephens)
July-October. On foliage — beech, elder, hawthorn, hazel, holly, oak, sycamore.
8. *Ectopsocus briggsi* McLachlan
April, July-December. Common on foliage, especially in the autumn when it is found in large numbers on dead leaves. Also often found on window ledges blown in by the wind. Birch, bramble, hawthorn, holly, laurel, oak, privet, rhododendron, sweet chestnut, willow.
9. *Peripsocus phaeopterus* (Stephens)
July. On foliage and bark — unidentified deciduous tree.
10. *Trichopsocus dalii* (McLachlan)
July, October. On foliage — holly, yew.
11. *Elipsocus hyalinus* (Stephens)
July-August. Common on foliage — hawthorn, holly, oak, sloe, sycamore, willow.
12. *Elipsocus westwoodi* (McLachlan)
July-August. Common on foliage — hawthorn, holly, oak, *Rosa*, sycamore, willow.
13. *Philotarsus picicornis* (Fabricius)
August. On foliage — hazel, lime, oak.
14. *Mesopsocus immunis* (Stephens)
June-July. On bark — beech, holly, sycamore.
15. *Mesopsocus unipunctatus* (Mueller)
June-August. Common on bark and foliage — birch, bramble, hawthorn, hazel, oak, snowberry, yew.

16. *Trichadenotecnum (T.) sexpunctatum* (L.)
July-August. Common on bark — beech, oak, sycamore.
17. *Trichadenotecnum (Loensia) fasciatum* (Fabricius)
June-July. Common on bark. This species and *sexpunctatum* appear to have mutually exclusive seasons on the same type of habitat. Alder, beech, oak, pine, sweet chestnut.

REFERENCES

New, T. R. (1971). An Introduction to the Natural History of the British Psocoptera. *Entomologist*, 104:59-97.

New, T. R. (1974) R.E.S. Handbook for the Identification of British Insects. Vol. 1, Part 7: Psocoptera.



NO STRAIGHT WAY ACROSS

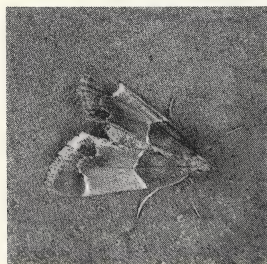
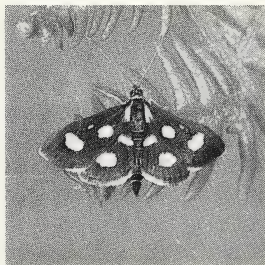
I am beside a river wide, with no straight way across,
I can't go round, or underground, my mind is at a loss,
But now I see, in front of me, a stone and there beneath,
A chance for me to cross this sea, for there I see a leaf,
I feel the lip, and take firm grip, and lift the leaf up high,
Legs pick up slack, I arch my back, and wished that I could fly,
And then at last, past blades of grass, I reach the water's side,
The dampened stones, the sticks and bones, pond-skater hunters hide,
I place it down, and look around, and then upon it leap,
I push off for the other shore, the waters seem so deep,
I'm pulled along by currents strong, and fish around me snap,
Another rose, and then I froze, and jaws just missed went 'clap',
And now at last, the danger passed, the trout and minnow dive,
I then walk off, and look aloft, this ant is still alive!

Richard M. Donald (5789)

BOOK REVIEWS

British Pyralid Moths: a Guide to their Identification by Barry Goater. Illustrated by Geoffrey Senior and Robert Dyke. 8vo, 175 pp (including 9 coloured plates), line illustrations. Harley Books 1986. Hardback. Price £18.95.

As a schoolboy lepidopterist, the first book which I purchased on the subject was not Richard South's *Moths of the British Isles* but the new colour plate edition of Bryan Beirne's *British Pyralid and Plume Moths*. I seem to remember that the decision was not unconnected with the fact that Beirne cost 21/- at the time whereas each volume of South was 35/- Thus began my particular interest in the Pyralidae. Since that time Warne have regularly reprinted the 1961 edition of South but have never reprinted the less popular Beirne. The result has been that copies of Beirne have become almost unobtainable on the second-hand market and command very high prices. In this context Mr Goater's new work is most welcome, particularly in view of the overlong gestation period of volume six of *The Moths and Butterflies of Great Britain and Ireland*.



This work begins with an introduction by the noted Canadian entomologist Dr Eugene Monroe, followed by a check list of the British species and a description of the family characteristics of the Pyralidae. The systematic section describes each species under the headings of Imago (description and separation from similar species), Larva (biology of early stages and pupula) and Distribution (in the British Isles). There then follow eight colour plates, list of references, glossary and indexes.

The book is far more useful than the earlier volume for accurate identification and separation of difficult species-groups as identification is aided by sets of line drawings in the text. As with other recent textbooks on British Lepidoptera the descriptive text emphasises special differences, as do the figures. This is something which the line drawings in Beirne never did. Of the twelve sets of figures by Robert Dyke, seven are excellent new drawings of genitalia. Those illustrating the genera *Ephestia*, *Homoesoma* and *Phycitodes* are particularly useful since genitalic examination is almost essential for accurate identification. Such figures were only otherwise available in Roestler's article in *Mitteilungen der Münchner Entomologischen Gesellschaft* 56 (1956). What would add much to the book would have been more highlighted figures illustrating described differences in wing pattern, particularly for the *Crambinae* and for *Eudonia* and *Scoparia*. There are only two such figures and they are not highlighted. The inclusion of rare vagrants and species which can only maintain populations in specialized artificial environments such as numerous "Agassiz species" has raised the number of species covered from 174 to 208.

The eight photographic plates by Geoffrey Senior are excellent. The specimens have been photographed against a pale blue background as are the plates in Bernard Skinner's *Colour Identification Guide to Moths of the British Isles* and although they show somewhat more background shadow than in that volume are far superior to those in a recent Danish book on the Pyralidae.

In spite of a minor quibble about the text figures I feel that Mr Goater's book will have done a major service to stimulate amateur interest in the Pyralidae and is a most worthy successor to those of Leech and Beirne.

P. J. Jewess

Ladybirds in Dorset by Adrian Moon. A5, 24pp, illustrated. Dorset Environmental Records Centre, 1986. Price £2.75 including p&p, obtainable from Dorset County Museum, High West Street, Dorchester.

Adrian Moon's booklet is a welcome addition to the entomological literature, and although it deals specifically with ladybirds in the county of Dorset, it goes some way to overcoming the lack of general guide to these most popular of insects.

The booklet opens with a short text, briefly covering a definition of the Coccinellidae, their life history, habitat requirements, how to find ladybirds, and ladybird folklore. The text is too short to go into any detailed description of ladybird biology, particularly in respect of particular species. But the most important part of the book is the key.

This covers 28 of the 43 British Coccinellids, including all the larger species which would normally be thought of as ladybirds. Essentially it is a field key. The only equipment required to use the key are an X10 hand lens, and a millimetre rule. And the key works. It makes possible a confident identification of the vast majority of ladybirds that one is likely to encounter in the field, and only breaks down with some of the very rare colour varieties of species like *Adelia decempunctata*, *Anatis ocellata* or *Micraspis sedecimpunctata*. There are numerous thumbnail sketches in the key, which are most useful, and 27 of the species covered are shown in the plates. Unfortunately, due no doubt to the restrictive cost of colour printing the plates are in black and white. Because of the nature of ladybirds and the amount that the number and strength of the spots varies, colour plates would be a considerable advantage. The ladybirds are not all drawn to the same scale, their relative sizes being indicated by scale bars. Personally, I find these rather unsatisfactory and would prefer that at least all the insects on a particular plate were drawn to the same scale. But the plates are still useful, and generally well drawn.

There are some minor errors or ambiguities, both in the nomenclature and in the information given on particular species. For example the genera given as *Tytthaspis*, *Thea* and *Neomysia* should be *Micraspis*, *Psyllobora* and *Mysia* respectively. The 11 spot is noted as occurring in damp areas while in fact, Benham and Muggleton have shown that it is resistant to dessication and that its distribution is inversely correlated to humidity. And there are some other minor inconsistencies.

However, the booklet, which is well produced, is of great use to anyone who wishes to collect and study ladybirds. And although £2.75 seems a little expensive for a 24-page booklet, it is the only worthwhile text on British ladybirds available at the moment, and Adrian Moon, and the Dorset Environmental Records Centre, should be congratulated for its publication.

Mike Majerus

Charipidae, Ibalidae & Figitidae. Hymenoptera: Cynipoidea by N. D. M. Fergusson. 8vo, 55 pp, illustrated. *Handbk. Ident. Br. Insects, Vol. 8 part 1c*. RESL, London 1986. Price £5.00 (£3.50 to Fellows RESL).

This slim volume is a welcome addition to the authoritative series of RESL Handbooks, completing the series dealing with British Cynipoidea. The recent changes in style of the handbooks have been most effective, and this work is compact and makes easy reading even for the complete

newcomer to the group. Indeed the contents and layout are of such a high standard that it puts to shame some of the numerous, more popular entomological works currently on the market, even considering the handbook's specialist nature.

The Charipidae, Ibaliidae and Figitidae are three very small families (45 spp. in total) of parasitic wasps which together with their better known relatives the Cynipidae (Gall-wasps) and Eucoilidae comprise the Cynipoidea. Being of diminutive size and easily overlooked, the former three families have attracted scant interest among entomologists and there are numerous gaps in our knowledge of their biology. Many, however, are economically important as parasites of crop pests and therefore ideal agents for biological control. Evidence for the lack of work on these particular insects is striking: from only 45 species Mr Fergusson lists a total of 43 synonymies (specimens of a single species unwittingly described and named as different species)! Even so an impressive bibliography has been compiled that concerns not just these families but all three handbooks dealing with the Cynipoidea.

The keys themselves are preceded by a very good general account of the biology of these wasps, plus a useful section on collection and preservation, an introduction, and a thorough checklist. The keys are well composed and utilise fairly major characters which are easily seen with the aid of a binocular microscope. For me, at least, a hand-lens is much too weak and cumbersome for these insects but that may be a result of being pampered too long with a microscope. The layout is clear and well planned: keys to families are followed with keys to the subfamilies, then genera and species within each subfamily. Notes on taxonomy, distribution and biology accompany each key level and the illustrations are simple and well drawn.

A glossary (always useful) is included, and the substantial bibliography and index complete this fine handbook. Nigel Fergusson's work provides an ideal, practical guide for workers in this field and should promote further study of these important little insects.

Clive Betts

Atlas over viklernes udbredelse i Danmark (Tortricidae & Cochyliidae) by Eivind Palm. A4, 110 pp, many distribution maps. Hardback. Scandinavian Science Press, Klampenborg 1982. Price £10.00.

This volume commences with an 18-page introduction discussing the Danish lepidopterous fauna. A brief bibliography then precedes the main body of the work, which is a long series of annotated maps of Denmark showing the known distribution of the 359 species of Danish Tortricidae and Cochyliidae. The text adjoining each map comments briefly on the abundance, habitat preference, foodplant and mode of larval feeding of each species. A brief note of the European distribution is also given. Only

one species, *Eucosma krygeri* Rbl. is illustrated, no doubt because it is unique to Denmark. The text is in Danish, but 18 relevant Danish words are translated into English to assist the general reader.

PAS

An Atlas of the Carabidae (Ground Beetles) of Northumberland & Durham by M. D. Eyre, L. Luff and S. G. Ball. A4, 96 pp, comb bound in card covers. Northumberland Biological Records Centre 1986. Price (incl. p&p) £5.50 obtainable from The Hancock Museum, Barras Bridge, Newcastle upon Tyne NE2 4PT.

This publication follows on from the *Atlas of Water Beetles* (reviewed in the May 1986 *Bulletin*, p. 88). Following a four-page introduction, mainly on the source of records, there is a 19-page annotated list of species, followed by maps giving the tetrad distribution of all the species found in the survey area. The work concludes with an index and bibliography.

The style and format of this volume follows closely that of the first, except that the presentation of the maps has been improved. This is an excellent and carefully researched volume — a number records from authorities such as Fowler have been shown to be erroneous, and perhaps the most interesting record is that of the very rare *Amara nitida* in 1985 (known only from Warwickshire).

PAS

Breeding butterflies and moths by Ekkehard Friedrich. 4to, pp.176, illustrated. Harley Books, Colchester, 1986. Price: hardback £20.00, paperback £9.95.

Originally published in German, the French version of this book was reviewed in the *Bulletin* (Vol. 42: 171-2) in 1982 when the reviewer stated that he hoped an English version might be attempted. We owe a great debt to Harley Books for making this possible and to their collaborators in making this English edition a much better publication, not only as to content but also as to presentation, printing and paper. The format is larger (4to) and this has enabled the inclusion of more material with a reduction in pages from the 235 in the French edition. The author has supplemented his original text with further observations from various sources and the section on the Geometridae has been augmented by Jim Reid. The small reference in the original to the microlepidoptera has been replaced by a comprehensive section, the work of A. Maitland Emmet, the editor of this new edition.

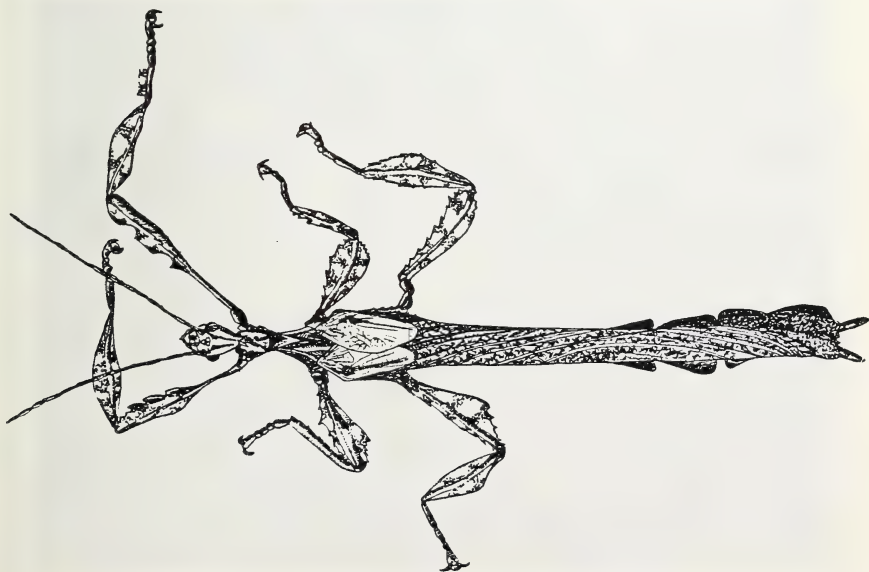
The arrangement of the chapters on the rearing of species has been altered to bring it in line with current usage in this country while nomenclature follows Kloet & Hincks for British species and Leraut (1980) for continental ones. However there are anomalies eg. the newly erected

genera of *Eurodryas* and *Hypodryas* have supplanted *Euphydryas* but the genus *Clossiana* has reverted to *Boloria*, a genus now used only for those fritillaries of the *pales* group. It would be nice if we could all agree to use the names proposed by Higgins & Riley for our European butterflies and save some confusion.

Now that it has become available in English this must be *THE* working and reference book for all lepidopterists who wish to breed continental butterflies and British and European moths. The book makes the difference between "breeding" and "rearing", the former requiring the ability to cover the whole life-cycle from pairing through to the next generation and beyond. Much information is given on the control of diapause by the use of simulated daylight; our Brian Gardiner has provided a section on artificial food for larvae and Michael Tweedie provides a series of photographs of the life history of the Puss moth for the front cover. Perhaps the greatest accolade should go to Steven Whitebread, an English entomologist living in Basle, for the excellence of the translation of the original German text.

When one recalls that the price of the French edition was stated to be around £20, the paperback edition at £9.95 is a bargain that no member can ignore and for the junior member it would make a wonderful present. Thank you Harley Books for another winner.

PWC



The male of *Extatasoma tiaratum*. Drawn by Paul N. Charlton.

PROCHEORODES TRANSVERSATA

The Large Maple Spanworm, an interesting Canadian Geometer

by John L. Gregory (4166)

OVA: These are small for the size of the moth, pale bluish-green and are laid during the summer and autumn in small batches on twigs of the foodplant. When fertile they soon change colour to a dark brown and over the winter they gradually acquire a more pinkish tinge. Mine hatched in late March. However, there is a puzzle here, for in his book *Butterflies and moths of Newfoundland and Labrador* Ray F. Morris gives this species as hibernating in the pupal stage. This certainly does not accord with my observations and it is inconceivable that moths emerging so late in the season could give rise to a generation which would feed up fast enough to overwinter as pupae.

LARVAE: These are very active on hatching, presumably to ensure a wide dispersion in the natural state. At this stage they are dark grey, long and slender.

From a choice of Hawthorn, Blackthorn, Rose, Sallow, Bramble, Honeysuckle and Sycamore, the most acceptable pabulum in captivity seemed to be the Hawthorn (although in the wild in USA Maple and Oak



Fig. 1. Male of *Procheorodes transversata* at rest. (Photo by Bill Lichti.)

have been recorded as the preferred foodplants). Several minor colour-forms became noticeable as the larvae grew, ranging from dark purplish grey to various shades of dark brown or grey. In the final instar they were still very long, slender and twig-like. A few of them had slight indications of obscure longitudinal light and dark lines, whilst others were almost unicolorous dull brown.

Two rows of very small protuberances were present along the back, except for those in the eighth segment which were larger than the others. A whitish V-shaped mark was very noticeable on the eighth segment of some individuals, but completely absent on others. A lateral swelling on the sides of the mesothoracic segment was present on all the larvae. A complicated pattern of black spotting, which varied in size according to the individual, was conspicuous on many of the larvae, and was usually most noticeable on the lighter coloured forms.

COCOON: A rather flimsy affair, spun up among foliage, with the pupa clearly visible in many cases.

PUPAE: These are variable, light greyish to pale reddish, or a pinkish grey, even almost black, with the spiracles usually showing as a row of black spots on each side.

IMAGINES: The wingspan is about two inches, with a sharply pointed apex to the forewings and a similar but less sharp point on the middle of the termen of both fore and hindwings. Although there was only slight variation in the shape of the main wing markings, a very wide range of colour-forms occurred among moths of the same brood, with ground-colours varying from pale yellowish brown to shades of purplish brown, reddish brown, and light greyish brown, although moths which were reared in late autumn from non-diapausing ova tended towards a less variable rust-brown colour. A very fine sprinkling of grey scales was present on the wings of the specimens of the summer generation, giving a rather mottled effect. On all specimens the postmedian line of the forewing is a straight or outwardly curved narrow blackish or dark brown line, usually edged outwardly with greyish and sharply angulated towards the apex. The more suffused antemedian line is inwardly angulated towards the costa, and varies from rust-brown to dark grey. On some of the lighter coloured moths it may be either contrastingly very dark or virtually absent. The subterminal area often displays a wavy dark line between the upper half of the postmedian line almost to the tornus, and this wavy line is usually repeated on the hindwings, sometimes showing on the hind wing in specimens in which it is absent from the forewing. The forewing colours match those of the hindwing which is bisected by an almost straight, narrow, grey-edged, fine blackish line. All forms of the moth at rest look very much like a dead leaf and the less heavily marked individuals are usually female.



Fig. 2. Larvae *Procheorodes transversata*. (Photo by John Gregory.)

DISTRIBUTION: This is a common and well-known species throughout most of the USA and southern parts of Canada. It would appear to be mainly bivoltine (or perhaps partially univoltine in the north of its range), with moths emerging from early summer to late autumn. In captivity in the UK, moths emerged in June/July, and there was a second brood in September/October, which produced the overwintering ova.

Acknowledgement: Many thanks are due to Bill Lichti who has supplied me with ova of this species.

DEATHSHEAD HAWK IN OXFORDSHIRE

by J. Turner (8466J)

In the final week of September last year one of my friends, knowing of my entomological interests, knocked on my door bearing with him an empty pupa case which was of the deathshd hawk (*Acherontia atropos*). He had found it alongside a row of potatoes while digging on his father's allotment in Farringdon. This is clear evidence that the moth bred locally and in full view of its rarity worth reporting.

MACULINA ARION IN THE DORDOGNE, 1985

by J. A. D. Smith (5438)

I rented a farmhouse in the north-eastern Dordogne for a fortnight between 27th July and 10th August 1985. Situated on a calcareous hillside, facing south, near Riberac. Here, it was pleasing to see in France, areas signposted "Réserve de Repeuplement" instead of just protecting a few species against collecting.

The farmhouse has a wild garden of about a hectare with no boundaries, merging into woodland on two sides and fields planted with maize on the others. Around the house for a distance of about twenty feet, the grass is cut, though rarely, and the rest is left alone. Small juniper trees grow amongst the long grass with marjorum and scabious.

The garden supports a thriving colony of Large blues which were abundant when we arrived on 27th July, though the summer had been wet as in England. Newly emerged specimens as well as rather worn ones were flying. I think of the blues as being "late risers", so was surprised that *arion* were in flight by eight in the morning and until about eight in the evening when all but the Dryad (*Minois dryas*) and the Hedge brown (*Pyronia tithonus*) had settled for the night. Several pairs were mating and several females laying on the marjorum (*Origanum vulgare*). A female would perch on the terminal leaf cluster, or nearby, and insert her abdomen between the leaves to lay one egg on the underside of a leaf; the disturbed leaves would spring back, leaving a pale blue egg quite invisible without moving the leaves. This process took about one minute, and I observed one female repeat the process nine times before taking a rest.

The long grass near the house was the most popular place for the butterflies where the marjorum and scabious (*Knautia arvensis*) grew most prolifically; this latter appeared to be the nectar plant of choice. The range of the butterflies seems to be very small: 95% of them were to be seen at any time in an area of only one acre; they did not fly in the light woodland nor in the surrounding fields.

The only other sighting of the Large blue was about four miles away on a sunny bank by the roadside where I found a colony of what I took to be Reverdin's blue (*Lycaeides argrognomon*), though to distinguish this from the Idas blue (*Lycaeides idas*) for sure is beyond me. Amongst them a female Large blue was busily laying on marjorum. The following day, the road verges had been cut and no butterflies were to be seen. Fortunately the owner of the farmhouse is aware of the value of the wildlife in his garden, and has no plans to disturb it.

BUTTERFLIES OF THE VAL D'ARAN

by A. M. Slater (6805)

As a child in the North of England I would dream of encountering actual living specimens of those 'exotic' butterflies pictured in my well worn Observers' Book. After many years, my dreams became reality in the Aran Valley. With my wife and son, I have now spent four holidays there in recent years, each lasting a week and a half and largely covering the period mid-June to early August. My somewhat moribund interest in lepidoptery has been rejuvenated and extended.

Background The Catalan Val d'Aran lies on the northern flank of the Pyrenees some 50 kilometres west of the Principality of Andorra as the crow flies. At just under 1000m altitude, Viella, the "capital" of the valley, and roughly halfway up it, is 26 kilometres by road from the French frontier. The town is ideally situated for walking up the winding paths and tracks into the mountains which hem the valley, and for joining one of the many jeep excursions further afield. The National Park of Aigues Tortes (Twisted Waters), the destination of one of these bumpy rides, provides particularly panoramic views. Ski-lifts open in mid-July, one to 1500m near Viella, the other, some 18 kilometres up the valley, an abyss dangling three stage journey to nearly 3000m at Baqueira Beret. The river Garona (Garonne) rises high in the valley and flows its length, joined by numerous tributaries from the mountains.

Landscape Deciduous trees, scrub and farmland by the river, give way to hay and flower meadows, mixed and evergreen forests, and grassy slopes above the tree line. Even further up, bare rock protrudes, the higher sierras capped by snow clad peaks. Cold azure lakes dot the high plateaus and rushing torrents tumble down the mountain sides. This backcloth is scenically superb.

Weather The valley enjoys an Atlantic climate which is a polite warning against rain, and not infrequent hail and thunderstorms. There are hot sunny days too.

A rather scary drive under the mountain barrier through the dripping wet 5 kilometre Tunel de Viella can lead to a dramatic change in both weather and scenery. A corollary to the abundant rainfall is far lusher vegetation in the Aran valley than on the more arid Mediterranean side of the Pyrenees.

Butterflies The changing terrain provides a considerable variety of butterflies although the altitude produces smaller insects than on the plains. In the following paragraphs I use English nomenclature where possible. I make no reference at all to the commoner British species, such as small heath and whites etc, since these are, in general, equally as

common in the Aran valley. I apologise for any lack of completeness but when distinguishing certain species of ringlet, skipper, blue, or fritillary, there are areas where I am unable to differentiate. Moreover, I find it totally frustrating when looking at one single specimen to be informed by the guidebook that similar species are distinguished by the one being larger or darker or more fulvous etc than the other. Now if one of either species were perched on adjacent flowers . . . Accordingly, my observations are, except where stated, restricted to positive identifications only. Note finally that the insects were observed over a period of four years and not all in one year.

Papilionidae The clouded apollo precedes the larger *Parnassius*, both flying at c. 1500-2500m. The latter, with its powerful though laboured flight, is a truly magnificent alpine butterfly, a pristine male being snow white with jet black markings and bright red ocelli. It delights in floating on the stiff mountain breeze and will settle for minutes on a sheltered thistle or sun itself on the bare ground. Swallowtails, seen only in August, are rare, and I recorded only five *machaon* and two Scarce swallowtails (form *feisthamelii*).

Pieridae Black veined and wood whites are abundant in June, the less common Bath whites occur later. Other early fliers are Moroccan orange tips, and dappled whites at altitude. Clouded yellows (female white form *helice* not uncommon) abound, Berger's clouded yellow is rarer, and here and there, the mountain clouded yellow pursues its mad dash high in the hills, completely disappearing, when it lands, so good is its camouflage.

Satyridae The meadow brown, large wall brown, and speckled wood, were observed in their southern European forms, *hispulla*, *adrasta* and *aegeria*, respectively. Pearly and Spanish heaths are not rare. I pass on ringlets being positive only that there are species of mountain and brassy ringlets. In late July a colony of great white banded graylings was discovered and an occasional great sooty satyr lumbered by, both in the valley bottom.

Lycaenidae Blues An occasional large blue was observed in June, one at 1800m. Early in July, little, silver studded, adonis, mazarin, and turquoise, blues arrive, with chalk-hill and long-tailed blues later. One Damon blue, one blue argus, and one green underside blue, complete the list.

Coppers The scarce copper (form *virgaureae*) belies its name, but I have seen only a few purple edged (form *hippotoe*) and purple shot (form *gordius*) coppers, both at about 1800m. Sooty coppers were commonplace in August.

Hairstreaks Sloe (abundant), ilex (local), blue spot (rare), and purple (*quercus* rare, *iberica* less so) hairstreaks were noted.

Hesperidae I was able to identify mallow, silver spotted, and large grizzled skippers, and one Lulworth skipper.

Nymphalidae Of the fritillaries, the heath and/or false heath proved ubiquitous in June alongside the Glanville and dark green. Higher up, the pearl bordered, marsh (form *debilis*) and Queen of Spain, fritillaries were widespread. During July the high brown (both *adippe* and *cleodoxa*), marbled and lesser marbled, silver washed, and knapweed fritillaries emerged, with Shepherd's fritillary darting about the flowers by the mountain streams. The common spotted fritillary takes the form *meridionalis*, the female heavily suffused with grey.

White admirals (both *camilla* and *reducta* are present) are quite scarce, and I observed a few large tortoiseshells, two map butterflies (second brood), and several Camberwell beauties, all in August. The elusive purple emperor flies late in July in the treetops beside the rivers. I was fortunate to stumble upon two purple-sheened males (one form *clytie*) resting on a cowpat, and even more fortunate to observe a male and a female *Apatura iris* fly down to drink from a stream, high in the hills.

In passing, I mention that it was strange to see numerous red admirals and painted ladies in June (April in Corfu but that is another story!) in contrast to their much later appearance in the U.K. I also wonder whether readers have the same problem as I in possessing many fine close up photographs of flowers from which the butterfly subject has flown . . . so much for my tripod and macro-lens!

My visit last year coincided with that of a noted Spanish lepidopterist — Senor Domenech — who has a small butterfly museum in Lérida, the provincial capital. He spoke no English, my Spanish was limited, so we happily conversed at length over Higgins and Riley (Spanish edition), largely in Latin.

Conclusions Visitors to the Aran valley should take a waterproof, a powerful insect repellent, beware snakes in the grass (literally), bear in mind that the "locals" are not over friendly and few speak any English, and be prepared for fairly simple accommodation (unless you stay at the paradors) and food altogether different from England. Despite these drawbacks, providing you are fit and active, like tough walking, and are content to marvel at the scenery, flowers, and butterflies, the Val d'Aran can be very rewarding. After a year's commuting to the City of London, I count it a privilege beyond compare to sit in peace amidst mountain wilderness beside an alpine stream, and simply observe.

COLLECTING IN MAYRHOFEN, JULY 1985

by I. MacFadyen (6218)

Probably everyone aspires to collect abroad at some time or another, but the cost of such ventures is likely to be prohibitive. For a long time I had mused over the "Summerplan" advertisements in the press, offering a week's holiday in the Austrian Tyrol from £69 half-board. I thus booked

a week for my wife and myself with "Summerplan", 19th-26th July, at one of their villas in Mayrhofen in the Ziller Valley.

The valley is relatively low and surrounded by mountains, all of which are easily surmounted by cable-car. Because it is so sheltered, the climate in Mayrhofen is warm and generally wind-free.

After a 13 hour drive by coach from Ostend in Belgium (following a short flight from Lydd), through Luxembourg and Germany, we arrived in Mayrhofen where we immediately noticed the warm, balmy air, so different from the unsettled weather we had left behind in Surrey. The following morning we were offered a choice of organised trips by Summerplan, and we chose three scenic ones where there would likely be opportunity for collecting.

At 12.30 pm on Saturday 20th July, we set off for the Schlegeis Lake (Schlegeisspeicher), Schlegeisgrund, in the Ziller Valley (1805m). The trip cost 268 Schillings, (approximately £10). On arrival, we were given a delicious hot meal, after which everyone walked off on their own having been told to meet back at the coach at 4.30pm. I first walked to the dam wall, where I immediately saw an Alpine grayling, *Oeneis glacialis*, which settled conveniently on the ground in front of me. We subsequently followed a track above and overlooking the lake, where we collected a number of different species, among them, Large ringlet, *Erebia euryale*, — Blind ringlet, *E. pharte*, — Bright-eyed ringlet, *E. oeme*, — and the Silky ringlet, *E. gorge*.

On Sunday we again took an organised trip, to the mountains of Hintertux — the Tuxer Volarpen, or Tuxer Alps. The cost was 300 Schillings per head (approximately £11). From Hintertux we took the Gondola cableway to the Tuxer Fernerhaus (2385m), where we watched summer ski-ing (snow all the year round), in the intermittent sunshine. We returned the following day on our own, taking the post-bus from Mayrhofen and paying direct for the cable-car to the top, at a saving of 50 Schillings per head from the organised trip. The weather had greatly improved — the sky was now completely clear. We went to the very top of the highest peak (over 3047m), where we looked down on the Schlegeis Lake, with the Italian Alps beyond. A Shepherd's fritillary, *Boloria pales*, landed on the wall of the Tuxer Fernerhaus, and my wife was startled to see a Small tortoiseshell, *Aglais urticae*, at the very top, viz., 3200m! (Indeed, throughout the holiday I was amazed to see Tortoiseshells and both Large and Small cabbage whites, flying at the highest altitudes). After a meal at the Tuxer Fernerhaus, we made our way down to the tree-line, where I collected Shepherd's fritillary, *Boloria pales*, Mazarine blue, *Cyaniris semiargus*, (the commonest "blue"), Blind ringlet, *Erebia pharte*, Large ringlet, *E. euryale*, Lesser mountain ringlet, *E. melampus*, Mountain ringlet, *E. epiphron*, on the flower-covered alpine slopes near the cable-car run.

On Tuesday 23rd July, we took the "Penkin" cable-car from Mayrhofen to Larchwold Naturshutzgebi (1762m). On the top of the mountain, which overlooks Mayrhofen and the Ziller Valley, there is a flat plateau, covered with the most beautiful alpine flowers, pocketed with numerous secluded and sheltered dells where there was an abundance of butterflies including Queen of Spain fritillaries, *Argynnis lathonia*, Small tortoiseshell, *A. urticae*, Mazarine blue, *Cyaniris semiargus*, Titanias fritillary, *B. titania*, Heath fritillary, *Mellicta athalia*, Sooty copper, *Heodes tityrus*, Alpine heath, *C. gardetta*, Alpine argus, *Albulina orbitulus*, Eros blue, *Polymmatos eros*, and worn Cynthia's fritillary, *Euphydryas cynthia*. We also saw two Apollo butterflies, *Parnassius apollo*, flying fast and furious in a straight line, across the plateau.

The following day we took the "Ahorn" cable-car from Mayrhofen to the opposite peaks of Hahnpfalz (1907m). Initially we found this to be less productive than the former, until we worked round to the south-facing slopes from the rest-house conveniently located about half-way round the clearly marked route (2238m). A similar range of species as the previous day was found, although we were unable to conclusively identify any Apollos.

The holiday was rounded off with a visit to the Krimml waterfalls — the highest in Europe (1,250 ft) on Thursday 25th July, but we noted no new species.

Travelling back through Germany on Friday, I saw a Map butterfly, *Araschnia levana*, at the rear of a service-station on the Autobahn.

During the week I collected a total of 47 butterflies comprising of 20 different species. Setting was done in the evening before dinner, and I didn't take too long as I never had more than about a dozen in any one day. I had taken a choice of setting boards in a setting-case, together with the necessary equipment. I must comment on how pleasant it was to be able to freely collect without adverse comment from anyone — this contrasted with the attitude of some people one comes into contact with here at home, irrespective of how responsible one is being!

At such a small cost, such a holiday must be given serious consideration by anyone who wishes to combine a holiday abroad with a little collecting, on a limited budget. The organised nature of the package meant relaxed travel and easy access to collecting areas, and "Summerplan" even arranged good weather for us!

A word of warning however. Do not expect myriads of different species, in great abundance. I have seen more Meadow browns in local fields than alpine satyridae in the alpine meadows, and more Chalkhill blues in Dorset than blues in Austria. The choice of species is different, certainly, and then maybe, there are better areas — but nevertheless the numbers did not quite fulfil my expectations. Notably absent, disappointingly, were any large

nymphalidae in the woodlands (dense pine-forest), coppers, swallowtails, continental species of Pieridae — indeed a greater number and density of “blues”. I would be interested to hear from anyone who has visited that area as to what perhaps one is likely to find earlier or later in the year, say, May/early June, or August.

What everyone who visits the Ziller Valley will agree upon is that the scenery is absolutely spectacular.

NOT QUITE MOTHS

by C. R. Eastwood (7355)

Recent trips to the wooded areas of West Kent have indicated that poor weather during the summer has done little to retard the remarkable increase during the last few years in the population of the Moth Mimic Birdlime. Although there is no shortage locally of birdlimes, the Moth Mimic in particular has become prevalent to such an extent that it is now supplanting the small moths for which it is often mistaken along the edges of woodland clearings.

The particular species that is ravaging this area, *Guano vulgaris* (East.), has a span of 15-25mm and although there is considerable colour variation, is predominantly off-white or cream with irregular dark brown to black markings towards the centre. It so convincingly resembles one of the Carpet moths, especially towards dusk or in poor light, that many an unwary lepidopterist has vainly mutilated his limbs whilst ploughing through nettles and brambles in pursuit of his prey.

The reason for this imitative colouring is not easily determined. The theory I personally favour is that there is some symbiotic or mutually beneficial relationship between the moth and the birdlime. The moth obviously gains from predatory lepidopterists being distracted by the birdlime and perhaps overlooking the moth in their confusion over the plethora of similar shapes and colours. What is less immediately apparent is the direct benefit to the birdlime of this form of mimicry. The Canadian authority, P. John Crapp, suggests in a recent paper that perhaps lepidopterists in their frustrated quest for moths trample established tall undergrowth and thus provide new areas for the birdlimes to infest. Although there are major limitations to this explanation, it seems the most plausible of the many proffered.

Unlike some of the larger birdlimes which are most happy living around human habitations and show a marked preference for motor cars, windows and even washing lines as their roosting places, *Guano vulgaris* has a predilection for bramble and nettles. It seems to favour resting several feet away from established pathways, just visible to an observant eye but impossible to reach without grave risk of injury. Here the lepidop-

terist is particularly vulnerable as he will be stalking what is apparently a moth with his eyes rigidly on his potential prey and oblivious to attacks on his person from the vegetation.

One last observation which astounded us at first but seems less important in retrospect is the sharp decline in the numbers of birdlimes after heavy rain. Further studies have indicated simply that rain destroys a number of Moth Mimics whose colouring has become faded and less effective and leaves room for an influx of fresh, newly emerged specimens.

THE ORDER TRICHOPTERA IN THE MALTESE ISLANDS

by Steven Schembri (5519) and Dorothy Johnson

The order Trichoptera (Caddisflies) has only recently been reported as occurring in the Maltese Islands (Schembri, 1981). So far only one species *Tinodes macclachlani* Kimmins, has been reported. Further investigation of freshwater habitats has yielded an additional species:

Mesophylax aspersus Rambur (family Limnephilidae)

Date — MALTA: Bahrija Valley,		5 larvae taken 17.2.85,
		3 adults emerged 25.3.85.
Chadwick Lakes,		2 larvae taken 15.2.85,
		adults emerged 22.3.85.
San Pawl tat-Targa,		1 adult from light trap 13.4.85
GOZO:	Wied ic-Cawla,	2 larvae 9.4.84, leg. M. Gauci.

The two sites searched for larvae, Chadwick Lakes and Bahrija Valley, both in W. Malta, had at the time of searching (February 1985) fast-flowing, shallow streams. Both localities are valleys in which running rainwater accumulates and supplements the small natural streams running through these water courses. Water flows appreciably for only a limited period during the year. In the dry summer months (July-August) little if any water would be available, although certain areas of the valley beds remain damp throughout the year.

Adult caddisflies were searched for by sweeping waterside vegetation but no specimens were found. Larvae were sought by carefully upturning moderately large stones on the stream bed. Trichoptera larvae adhered to the underside of such stones and up to four individuals were observed attached to the same stone.

At Bahrija the larvae were very localised in areas of not more than 5 - 10m². Such areas tended to have a reduced rate of water flow and plenty of large stones mostly on the gravelly bottom. Only two caddisfly larvae were obtained from Chadwick Lakes amongst aquatic vegetation (*Ranunculus aquatilis*).

A small number of larvae were kept and successfully reared in an artificial "stream" in the laboratory. The larvae were fed on lettuce leaves and mosses. Adults emerged in late March.

It is worth noting that caddisfly larvae have been taken from Gozo (Wied ic-Cawla) where the habitat was similar to that at Bahrija. Although certain identification of this material is not possible, the larvae most probably belong to *Mesophlax aspersus* (Botosaneanu, pres. comm.). This species was also taken from San Pawl tat-Targa (Malta) where an adult entered a light trap.

The sudden spate of records of *Mesophlax aspersus* from the Maltese Islands is interesting. Unless this species has been previously overlooked, it is possible that it represents a recent introduction which has established itself. This species has a vast distribution. It is widespread in Southern Europe and occurs in the Canary Islands and North Africa. The species occurs sporadically in Central Europe and in England but is absent from Northern Europe. It also occurs from Asia Minor, the Levant including Sinai and extends eastwards to Pakistan.

Acknowledgements

The authors would like to thank Dr L. Botosaneanu of the Institut voor Taxonomische Zoologie (Amsterdam) for kindly determining the insect material and for supplying the zoogeographical information. We are also grateful to M. Gauci for collecting some of the specimens and to Dr P. J. Schembri for help in preparing this note.

REFERENCE

Schembri S. P. (1981) — First record of the order Trichoptera from the Maltese Islands — *Bull. amat. Ent. Soc.* 40(330): 25-26.

IS SYNTOMIS PHEGEA BREEDING IN SOUTHERN ENGLAND?

by Dave Moon (3850)

In May 1983, when on holiday in the south of England we picknicked one day on the edge of woodland above a village. It was a sunny day (31st), early to mid-afternoon, and we looked out over a field area skirted by the woodland path. A strange larva put in an appearance, sunning itself at the base of the sweet chestnut where we sat. The larva was superficially Arctiid, though very tightly haired, almost velvety in appearance, with a flattening or groove in the dorsal "pile" of very dark brown hair. It was about the size of a full-grown buff ermine.

We left the larva where it was and committed its general features to memory, believing that we could easily identify it from pictures when we returned home. We could not. It was quite irritating, not being able to

come up with an answer! The larva did not resemble any of the illustrations of British larvae in our books.

The story has an interesting postscript. . . . As luck would have it, earlier last year Roy Chuter asked me to look after some larvae for him when away on a trip to New Zealand. He left them at his workplace in Brighton from where I collected them the following week. Roy had flown out a few days earlier but had already informed me that the larvae would eat garden weeds including plantain.

This reference to *Plantago* as a foodplant, the general appearance of the larvae when inspected and the fact that the early pupaters had been devoured by the remaining larvae (a typical Arctiid habit when short of food — as these remaining larvae were after almost a week — or overcrowded) all combined to delude me into thinking they were early-rising (February) wood tigers or the like. My teenage son had already made the observation: "They're like the larva we found on holiday!"

We looked up wood tiger larva again, but the illustrations certainly did not comply with the appearance of the living material. I should mention that the wood tiger is one I've never reared, so couldn't be positive. Putting it all down to poor illustrations and concluding after all, that the larva seen was a wood tiger, I got on with rearing Roy's stock. Within a few weeks the majority had spun among leaf debris and pupated inside cocoons invested with loose hairs — again decidedly Arctiid-like.

When Roy returned from New Zealand we arranged by 'phone for him to collect the wood tigers". He was perplexed by this reference. "Do you mean the *Syntomis amata*?" came the reply. Apparently, Roy had acquired the original stock of this Mediterranean species from a contact and had reared through several generations. He was happy to share the stock I'd cared for, so I was able to send a few pupae to Phil Holmes who opined *amata* was simply a form of *Syntomis phegea*. *Phegea* is not supposed to be a British breeding species, according to "South", though there is at least one record of an adult turning up in Kent. My question is: Did I stumble across one individual from a small colony of *phegea* on that sunny day while on holiday (for I'm now convinced it *was* a syntomid larva). Is this species now more widespread than once supposed and now accepted as a resident? Or did some enthusiast allow his captive stock of *phegea* to escape! I'd be grateful for some answers! It *may* be the only colony of *phegea* in existence (which is why I have refrained from mentioning the exact locality). Parts of southern England are noted for being among the mildest in Britain and support subtropical plants. It is quite conceivable that species from warmer climes could establish a shaky foothold there. But I still wish I'd taken a photograph as more conclusive evidence! None of these kinds of reported sightings of great rarities, without some weighty documentation, ever have the ring of authenticity to me, I must admit. It's a frustration we must all bear when it happens to us!

A FEW DAYS IN CATALONIA JUNE/JULY 1984

by Robin Brooker (5776)

Having visited most of the mountainous regions of Spain, except the Pyrenees, my wife and I decided to spend a few days there between the 27th June and 4th July 1984. Observing butterflies was not the primary purpose of our visit but we kept a record of whatever species were seen.

After flying to Gerona and spending a night in an hotel nearby, we travelled north in our hired car in the direction of Andorra. We stopped briefly to explore the attractive mediaeval town of Besalú and from the castellated bridge which spans the Rio Fluvia, watched some enormous fish stirring up the muddy river bed.

The road bends and climbs increasingly beyond Besalú and three of four miles past Ripoll we turned on to a track leading into the mountains. A few *M. parthenoides beata* Caradja were flying along the track and in the rough grass at the side, *C. arcania huebneri* Oberthur and *M. lachesis olaria* Ribbe, an interesting sub-species with marginal lunules completely absent, were abundant. Several *L. sinapis* f. *lathyri* Huebner were also present. Unexpectedly, this species was seen in almost every locality visited, sometimes large numbers, at altitudes ranging from 100 to 1,600 metres. Some specimens of *C. dia* L. were feeding from scabious in a small clearing in the undergrowth and nearby we sighted *M. aglaja* L., *C. croceus* Fourcroy and *P. carthami* Freyer. A single *L. reducta* Staudinger sailed overhead, followed by a very faded *Z. rumina catalonica* Sagarra, with its unmistakable gliding flight. This was an unusually late sighting but we were soon to discover that there had been some severe weather in the region, which appeared to have delayed the emergence of some species. I have seen this species before in a fresh condition, towards the end of May, in the Sierra Cazorla in Andalucia and no doubt in some seasons it can be found flying well into June.

We continued northwards and on the outskirts of Ribas de Freser, took a narrow mountain road leading to El Baiell where we were to stay for the night. On the profusion of wild flowers along the road we spotted *P. apollo antijesuista* Bryk and *I. podalirius feistamelii* Duponchel. There were also a few velvety brown *E. meolans* de Prunner and *P. escheri* Oberthur. A large number of *M. stellatarum* L. were patrolling the warm rock face beside the road, feeding from the flowers growing from every crevice.

Beyond El Baiell the road degenerates into a rough track and on some grassy slopes we found *A. crataegi* L. and a few *A. belia* L. flying fast and erratically. A little further on there were *E. ausonia* Huebner, *E. meolans* and *C. cardui* L. As there were rumblings of thunder in the distance and the threat of rain, we decided to drive to the nearby village

of Campelles, which is a noted locality for *P. apollo antijesuita*. A violent storm broke as we reached the village. The flashes of lightning were uncomfortably close and the car was battered by marble-sized hailstones which made a disconcerting noise on the metal. We waited for some time in the tiny village square and as the storm was only becoming more intense we headed for the comparative safety of our hotel. The way was blocked by a herd of cows, running madly along the road, terrified by the freak conditions and ignoring all obstacles. After surviving this encounter, there followed a hair-raising journey down twisting roads, with torrents of water in pursuit and visibility reduced to a few feet. The storm lasted twelve hours. During dinner there was a loud explosion as the hotel was struck by lightning and we went to bed by candlelight.

The next morning was warm and sunny and a stroll through meadows near the hotel produced sightings of *P. onopordi* Rambur, *P. argus* L. and *L. bellargus* Rott. By mid-morning we were crossing the Puerto de Tosas. The air was full of the perfume of Spanish broom and *P. apollo antijesuita* and *I. podalirius feisthamelii* were spotted regularly. A few hours later we were in Andorra.

It is a country of extreme contrasts and first impressions are entirely bad. The towns suffer from brash commercialisation and chaos reigns on the narrow and overcrowded roads. Away from the towns the scenery is wild and majestic and the flora exceptionally varied and colourful. As it was raining heavily and the mountains were covered in mist, we waited until the following morning to explore the valley leading to Els Cortals.

At an altitude of about 1,700 metres we found only *P. malvae* L. and *C. euphrosyne* L. Lower down butterflies were more abundant and we stopped for a picnic in a small pasture bounded by trees. There were many fresh specimens of *E. cardamines catalonica* Sagarra, the males of which have unusually extensive patches of orange on the forewings. Amongst them were some diminutive males with a wingspan of only 30mm.

In the sunniest part of the pasture, where it sloped steeply into a ravine, *L. sinapis*, *P. rapae* L. and *M. cinxia* L. were common. In some sheltered hollows there were a few *C. semiargus* Rott., *P. icarus* Rott. and *C. pamphilus* L. I was particularly pleased to find, flying near the road, a single specimen of *E. epiphron pyrenaica* Herrich-Schaffer and *P. machaon gorganus* Fruhst.

A few hundred metres lower down the valley there were *A. crataegi* and some flourishing colonies of *C. minimus* Fuessly. The most interesting discovery here was the comparatively rare *P. eunomia* Esper which was flying over wet meadows beside a stream.

Leaving the Els Cortals valley we drove along the Valira del Nord and on a road above Ordino found *E. meolans* and a very worn specimen of *N. antiopa* L., flying amongst birch trees. We saw this species again near

El Serrat, together with *P. c-album* L. and *A. urticae* L. The magnificent scenery beyond El Serrat, where snow was still thick on the high peaks, compensated for the paucity of butterflies. We were told that there had been heavy snow falls in the towns in Andorra as late as the 6th June, which probably explained why there were not more species on the wing.

We decided to head south on the following day, to be sure of good weather and crossing the frontier into Spain, we travelled towards the ancient town of Cardona. We stayed in a former castle overlooking the town, which had been converted into a luxurious hotel. Beneath our bedroom window there was an area of waste ground, covered with fennel and wild flowers. Several pairs of *I. podalirius feisthamelii* and *P. machaon hispanicus* Eller made an attractive sight as they sailed over the ramparts, returning occasionally to feed. There were also specimens of *M. lachesis* Huebner and *B. circe* Fabricius.

A few miles to the south of the town a rocky path leads from the main road, beside the Rio Cardener. We found this to be alive with butterflies. Dozens of *N. esculi* Huebner, together with the occasional *S. spini* D. & S. crowded onto every clump of scabious. *P. bathseba* Fabricius and *C. dorus* Esper were also common. There were a few very worn specimens of what at first appeared to be *L. coridon* Poda. On closer examination I decided that they must be *L. hispana* Herrich-Schaffer. They would probably have emerged in early June, which is too early for *L. coridon*. In some grassy clearings *P. escheri* and *L. bellargus* were flying in the company of *M. didyma* Esper and there were one or two *C. australis* Verity. As the heat was becoming overpowering we returned to the hotel and spent a pleasant evening watching a colourful display of traditional dancing in the main square of the town.

Our next night was to be spent at the Parador near Vic, about 30 miles east of Cardona. We stopped once on the way and found a large concentration of fritillaries on bramble bushes near the road. There were some very fresh specimens of *B. daphne* D. & S. together with *I. lathonia* L. and *C. dia* L. The Parador enjoys a spectacular setting overlooking a lake enclosed on one side by immense cliffs of reddish coloured rock. A steep path leads down to the lake shore, through rough grass at first and then dense woodland. There was an interesting selection of butterflies, with *L. hispana*, *P. argus* and *P. escheri* in the grassy areas and *C. lavatherae* Esper and *M. phoebe* D. & S. flying around bramble bushes nearby. In the wooded areas there were a number of *L. reducta* and *G. rhamni* L.

Unfortunately the meals in the Parador did not match the magnificence of the building and its setting, so we moved on again, to spend two days at the sea. En route, near Balsareny, in a clearing amongst pine woods, we found a colony of *E. aurinia* Rott. Flying with them were *C. arcania* and *P. escheri*. The small resort of Tamariu had

been recommended and we found a pleasant hotel overlooking the rocky bay. As expected, there were few interesting butterflies around the coast-line but it was a different story only a few hundred yards inland. Along a road bordered by fennel and arbutus, freshly emerged males of *G. cleopatra* L. were extremely common. They appeared to be fond of the flowers of honeysuckle and could be approached quite closely whilst feeding from them. *P. machaon hispanicus* was also plentiful and there were a few specimens of *C. argiolus calidogenita* Verity and the inevitable *L. sinapis*. In heavy shade we spotted a single female *L. roboris demissa* Verity which is distinguished by a row of blue submarginal spots on the hind wings. The most unexpected sighting was a very large female *C. jasius* which settled on a branch of arbutus a few feet away from us. Further specimens of this superb species were seen later, flying rapidly over the tree tops.

We returned to England on the 4th July. Although only a small amount of time had been spent observing and photographing butterflies, 70 different species had been recorded, including some which we had not seen before.

THE DUNBAR MOTH AND ITS DIET

by Jan Koryszko (6089)

During the summer of 1984 I found an almost fullgrown larva of the dunbar moth (*Cosmia trapezina*) on a wild rose-bush and it appeared to be eating an aphid. I had never observed this before, so I placed it in a container with some aphids and also with some of its foodplant and then it only ate the foodplant not the aphids. I repeated this experiment with further dunbar caterpillars which I found feeding on oak in both 1985 and 1986, and both gave the same negative result. It seems that my field observation was a one-off result and I wondered if in fact the caterpillar had been attracted to the sweet secretion (honeydew) given off by the aphids on the rose-bush. In the books I have consulted, various trees and shrubs are given as the dunbar's foods, with, in the later instars, other caterpillars, not to mention cold cooked mutton given by Allan in his *Larval Foodplants*. Is it possible that various cannibalistic caterpillars will sometimes turn to other insects rather than their own kind in order to supplement what may be a protein shortage in leaves? Perhaps they only do so if there is a shortage of other available caterpillars in their area.

BUTTERFLIES IN LORRAINE DURING 1983

by R. J. D. Tilley (7513)

Although there has been a considerable amount of interest recently in the distribution of European butterflies, little seems to have been recorded in the literature about the situation in Lorraine, which lies in north-eastern France. The note which follows, concerning butterflies observed during April to August 1983, in the region to the south of the city of Nancy, may therefore be of interest.

The terrain in the region is slightly calcareous and well wooded. The natural trees in the region are beech and oak. The other trees and scrub making up the woodlands are very similar to those found in woodland in southern England, with hazel, birch, ash, elm and members of the poplar family all occurring in varying abundance. Honeysuckle and bramble are common at forest margins. Although forest dominates much of the landscape plenty of fields are kept for pasture. These are often left ungrazed in the early part of the year and meadow plants abound, particularly the cowslip (*Primula veris*) and other species associated with alkaline soils.

The observations which follow relate mainly to an area around the village of Tonnoy which lies some 20 km south of Nancy close to the banks of the river Moselle. In close proximity to the village were meadows and orchards, especially of the greengage variety Mirabelle. At a little further distance from the village, areas of forest were found which became more extensive to the south and west.

Early April 1983 was rather cold and wet in the region. The trees were not in leaf but cowslips were just starting to blossom. On the 10th April, *Gonepteryx rhamni* (Brimstone) butterflies were seen in plenty in the local forests during the brief sunny spells. By the 16th April the cowslips were fully out, and both violets and blackthorn were starting to bloom. On that day, which was warm and sunny, plenty of *rhamni* were seen, together with one *Aglais urticae* (Small tortoiseshell) and one *Polygonia c-album* (Comma).

The weather to the end of the month continued in typical April fashion, with fine sunny spells alternating with dull wet weather. During this period *rhamni* dominated the butterfly population, but the first male *Anthocaris cardamines* (Orange tip) was seen on the 20th April. By the end of the month this species had become common, the first female being spotted on the 24th. On this same day a blue butterfly was also seen, flying quite high among the trees in a nearby forest. Although not positively identified, it was almost certainly *Celastrina argiolus* (Holly blue). Also seen was the first example of *Inachis io* (Peacock). Another butterfly to be seen before the end of the month was *Artogeia napi* (Green-veined white) which was first noticed on the 27th. On the last day

of April, which was fine in the morning, many *cardamines* and *rhamni* were to be seen in the forests and in addition a few *napi* were flying. One *argiolus* was confirmed and one male *Pararge aegeria* (Speckled wood) butterfly seen.

The early part of May was cloudy and wet and nothing new was recorded until the end of the month. On the 28th a few sunny spells brought out some *napi* and *rhamni*. On the 29th May, *napi*, *cardamines*, *aegeria* and four new species, *Leptidea sinapis* (Wood white), *Papilio machaon* (Swallowtail), *Callophrys rubi* (Green hairstreak) and *Carterocephalus palaemon* (Checkered skipper) were found to be flying. In addition plenty of *cardamines* ova could be found on *Alliaria officinalis* (Jack-by-the-hedge).

June opened heavy and warm. In a nearby meadow which bordered a wood, a fair number of butterflies were found. These were *napi*, *cardamines*, *sinapis*, *rubi*, *palaemon*, and new species *Cyaniris semiargus* (Mazarine blue), *Heodes tityrus* (Sooty copper), *Ceononympha pamphilus* (Small heath), *Erynnis tages* (Dingy skipper) and a Pyrgine skipper similar to *Pyrgus malvae* but which was not identified.

The weather continued fine for the rest of the month, and the numbers of butterflies and the number of species increased greatly during this period. For compactness the species seen on each occasion will not be listed but instead only new or notable ones mentioned.

By 4th June an *Athalia* type fritillary was seen but not positively identified as well as *Pieris brassicae* (Large white) and the spring form of *Araschnia levana* (Map). In a forest track three female *Hamearis lucina* (Duke of Burgundy fritillary) were noted, showing that this species had been on the wing for some time already. On 6th June in a meadow, one male *Eurodryas aurinia* (Marsh fritillary) was found while on an unmade road in the village both male and female *Lasiommata megera* (Wall) appeared. The following day the first female *semiargus* was noted and in a meadow near to the village, rather surprisingly, two *Erebia* butterflies were flying. These proved to be *Erebia medusa* (Woodland ringlet). By 8th June *Lyceana dispar* (Large copper), *Aporia crataegi* (Black-veined white) and the small skipper *Spialia sertorius* (Red-underwing skipper) had been seen. It was also noticeable that *sinapis* and *palaemon* had almost disappeared. The 10th June added the skipper *Ochlodes venatus* (Large skipper) to those flying in the meadows.

On 22nd June *pamphilus* was still on the wing and had been joined by many *Maniola jurtina* (Meadow brown). Both male and female *dispar* were also seen, together with *crataegi* and *venatus*. In addition one or two *Pyrgus malvae* (Grizzled skipper) were noticed. The 24th June brought the first male *Melanargia galathea* (Marbled white) together with a very late *A. cardamines* and a few elusive hairstreaks which were

flying around some blackthorn bushes bordering the meadow. These subsequently proved to be *Strymonidia pruni* (Black hairstreak) and were commonly seen in a number of similar localities in the area flying around the bushes bordering tracks and meadows.

The month of June ended with *pamphilus* clearly in decline but *jurtina* and *galathea* were rapidly increasing in numbers. On 26th June two new fritillaries appeared, *Melicta athalia* (Heath fritillary) was widespread while *Melitaea diamina* (False heath fritillary) was found in the forests flying along the edges of wide tracks. As has been noticed before, as *pamphilus* passed its season it was replaced by another small heath, *Coenonympha arcania* (Pearly heath), which was first seen as a single example on 26th June and again on 28th June.

At the beginning of July a number of new species were observed. These were *Aphantopus hyperantus* (Ringlet), *Limenitis camilla* (White admiral), *Apatura iris* (Purple emperor), *Nordmannia ilicis* (Ilex hairstreak), *Glaucopsyche alexis* (Green-underside blue) and *Thymelicus lineolus* (Essex skipper), which were all seen on 2nd July. At the same time, *jurtina*, *galathea* and *venatus* were common, *S. pruni* and the fritillaries *athalia* and *diamina* were readily seen and freshly emerged single examples of *urticae*, *sinapsis* and *rhamni* were noted.

On 6th July, in the forest clearings, *jurtina* and *hyperantus* were plentiful, as were the small fritillaries *athalia* and *diamina*. In addition *camilla*, *iris* and the two small skippers *lineola* and *Thymelicus flavus* (Small skipper) were also in evidence. One fresh *napi* was also seen. Around the same time, in the meadows, *galathea* was present in abundance, and a few *Artogeia rapae* (Small white) butterflies were beginning to appear. Three days later, on 9th July, besides the species mentioned above, *Argynnis paphia* (Silver-washed fritillary) and *Mesoacidalia aglaia* (Dark green fritillary) had appeared, and one *Vanessa atalanta* (Red admiral). The following day revealed *Quercusia quercus* (Purple hairstreak) and *Strymonidia w-album* (White-letter hairstreak) in the same forest that contained *iris* and *camilla*. The first example of the summer brood of *c-album* was also seen in the same place and the first male *Pyronia tithonus* (Gatekeeper) was seen at the edge of a meadow, feeding on bramble.

Over the next few days the populations of the Nymphalids in the forests increased. The only new species recorded though was *Apatura ilia* (Lesser purple emperor), which was flying with *iris* and had probably been present for as long as this latter species. By 20th July *camilla* was getting to look very worn. In the place of this species *levana* in the dark form were to be seen, but not in profusion. Several *argiolus* were also to be found along the woodland tracks, and *tithonus* was now common at the edges of the meadows.

During the rest of the month no new species were seen until the last day. Then the butterflies *Colias hyale* (Pale clouded yellow), *Thecla betulae* (Brown hairstreak) and *Lasiommata maera* (Large wall brown) were noted. The hairstreaks were to be found in a greengage orchard and were not completely fresh, so that it is safe to assume that they had been on the wing for some time already. Also on this last day of July fresh specimens of *megea*, *dispar* and *tityrus* showed that the second brood of these insects was starting to appear.

No other species of butterfly was found between the beginning of August and the 10th, when the visit came to an end. However, *icarus* became increasingly common, as did *dispar*, *tityrus*, *semiargus* and *hyale*. The large Vanessids *camilla* and *paphia* were now well worn, although still flying in small numbers and *c-album* was becoming more noticeable. Similarly, the second brood of the bivoltine species were becoming well established when these observations were terminated.

A complete listing of the species seen and the dates on which the observations were made is given as an appendix.

APPENDIX

LIST OF BUTTERFLIES OBSERVED AND DATES OF SIGHTINGS.

Satyridae

<i>Melanargia galathea</i> :	June 24,26,28,29; July 2,8,10,22,27,31; August 7,9.
<i>Erebia medusa</i> :	June 7,8.
<i>Maniola jurtina</i> :	June 22,26,28,29; July 2,6,8,9,10,13,20,22,23,27,31; August 7,9.
<i>Aphantopus hyperantus</i> :	July 2,6,8,9,10,13,20,22,23,27,31; August 7.
<i>Pyronia tithonus</i> :	July 10,22,31; August 7,9.
<i>Coenonympha pamphilus</i> :	June 1,2,4,6,7,8,10,22,24,26,28,29; July 2,8,10,27,31; August 7,9.
<i>Coenonympha arcania</i> :	June 26,28; July 2,8.
<i>Pararge aegeria</i> :	April 30; May 29; June 24,26; July 2,9,20; August 9.
<i>Lasiommata megea</i> :	June 1,6,7,8,9,10; July 31.
<i>Lasiommata maera</i> :	July 31; August 5,7,8.

Nymphalidae

<i>Apatura iris</i> :	July 2,6,9,10,13,20,31.
<i>Apatura ilia</i> :	July 13.
<i>Limenitis camilla</i> :	July 2,6,9,10,13,20,23,31; August 9.
<i>Inachis io</i> :	April 24.
<i>Vanessa atalanta</i> :	June 24; July 9,10,13,31.
<i>Aglais urticae</i> :	April 24; July 2,8,10,22,31.
<i>Polygonia c-album</i> :	April 16,20; July 10,13,20,31; August 9.
<i>Araschnia levana</i> :	June 4,7,8; July 20,27,31.
<i>Argynnis paphia</i> :	July 9,10,13,20,23,31; August 9.
<i>Mesoacidalia aglaia</i> :	July 9.
<i>Melitaea diamina</i> :	June 26; July 2,6,23.
<i>Melicta athalia</i> :	June 26,28,29; July 2,6,8,23.
<i>Eurodryas aurinia</i> :	June 6.

Riodinidae

Hamearis lucina: June 4.

Lycaenidae

Quercusia quercus: July 10,13,23.
Thecla betulae: July 31; August 7.
Nordmannia ilicis: July 2,10.
Strymonidia pruni: June 24,26,28; July 2.
Strymonidia w-album: July 10.
Callophrys rubi: May 29; June 1,4.
Lycaena dispar: June 8,10,22,26,28,29; July 2,8,31; August 7,9.
Heodes tityrus: June 1,2,4,6,7,8; July 30,31; August 7,9.
Celastrina argiolus: April 24,30; July 20,23.
Glaucopteryx alexis: July 2.
Cyaniris semiargus: June 1,2,4,6,7,8,10; July 31; August 7,9.
Polyommatus icarus: June 8,10,26,28,29; July 2,31; August 7,9.

Papilionidae

Papilio machaon: May 29; June 4,8; July 24,27.

Pieridae

Pieris brassicae: June 4
Aporia crataegi: June 8,10,22,26,28,29; July 2,10.
Artogeia rapae: July 8,9,10,20,27.
Artogeia napi: April 27,30; May 28,29; June 1,2,4;
 July 6,10,13,20,31; August 9.
Anthocharis cardamines: April 20,21,22,23,24,27,28,29,30; May 29; June
 1,4,24.
Colias hyale: July 31; August 7,9.
Gonepteryx rhamni: April 10,16,20,21,22,23,24,27,30; May 28,30,31;
 June 4,26; July 2,6,9,10,13,20,23,27; August 9.
Leptidea sinapis: May 29; June 1,2,4,10; July 2,6,9,22,31; August 7.

Hesperiidae

Pyrgus malvae: June 22.
Spialia sertorius: June 8,10.
Erynnis tages: June 1,4,7,10.
Carterocephalus palaemon: May 29; June 1,2,4,10.
Thymelicus lineolus: July 2,8,10,13,22,23.
Thymelicus flavus: July 6,8,10,13,22,23; August 7.
Ochlodes venatus: June 10,22,26,28,29; July 2,10,13,20,23.

RONALD N. BAXTER

Entomologists

45 Chudleigh Crescent
Ilford, Essex IG3 9AT

Telephone: 01-590 3285

Breeders of British and Exotic
Lepidoptera, Stick and
Leaf Insects, etc.

Papered Exotic Lepidoptera,
Coleoptera and miscellaneous
insects.

Lists issued twice yearly.
Yearly subscription 50p
£1.00 overseas.

*In your replies please mention
the AES.*

**Member of the Entomological
Suppliers Association.**

E. W. Classey Ltd.

**P.O. Box 93
Faringdon, Oxon.
SN7 7DR
England**

Books by post, New and
Second-hand

Catalogues on request

HARRIS'S AURELIAN

This rare and beautiful book by the famous 18th century entomologist-artist Moses Harris has been accurately and superbly reproduced, and is now available.

Published by Country Life Books, this Second Issue (c. 1773) of the First Edition includes the Supplement with the additional coloured Plates, incorporated after the publication of the First Issue.

The whole of Harris's text and the 44 magnificent coloured plates are all present, together with a portrait, an Introduction, and a Commentary on each Plate by Robert Mays.

The delightful engraved frontispiece, which includes a probable self-portrait, was always issued in an uncoloured state, as in this reproduction, until the last edition was published some 50 years after his death, according to leading authorities.

From: AURELIAN BOOKS

Barnards Farm, Debden Green, Saffron Walden, Essex CB11 3LU.

Price: **£16.00** postage included, or through Bookshops.

INSECT CONSERVATION NEWS.

Published by the Amateur Entomologists' Society and
edited by David Lonsdale.

Conservation is ineffective unless insects and their habitats are taken fully into account. ICN is the newsletter which is helping to put insects on the conservation map. Through it, this Committee has long drawn attention to the special needs of insects. We emphasise neglected habitat types (e.g. dead wood) and are pioneers for urban conservation.

ICN gives a wealth of news and information, with reports on our own projects, surveys and field meetings. The role of the amateur is vital in this work, and more support is urgently needed. The penalty for inactivity is the destruction of more of our favourite habitat sites and the continued erosion of the freedom to pursue our interests as inappropriate legislation seeks to protect species whose habitats have been destroyed.

ICN costs £1.30 for four issues (10p reduction for postal order payments)

Apply to Dr. D. Lonsdale, Forest Research Station, Alice Holt Lodge, Wrecclesham, Farnham, Surrey, GU10 4LH.

NATURE OF THE WORLD

Suppliers to Collectors, Schools and Colleges of
**TROPICAL & BRITISH BUTTERFLIES
AND ENTOMOLOGICAL EQUIPMENT**

In addition to our usual range of setting boards, Pins, Plastic boxes, Forceps etc, we have recently added **STORE BOXES** and the much acclaimed **SELF ASSEMBLY BREEDING CAGES** to our list.

**FOR COMPREHENSIVE ENTOMOLOGICAL SPECIMENS &
EQUIPMENT LISTS SEND 50p.**

SPRING BANK, BIRCHES LANE, NEWENT, GLOUCESTER.

*New books, paperback editions
and special offers!*



The Moths and Butterflies of Great Britain and Ireland

Edited by John Heath and A. Maitland Emmet

'... welcomed by all serious amateur and professional entomologists and will remain the standard work in the foreseeable future.' John F. Burton, *British Book News*

Advance notice of Volume 7 – HesperIIDae to Thyratiridae

The next volume in this series, in an advanced stage of preparation, is scheduled for publication in June 1987. It will include all the British butterflies and some families of larger moths. Colour plates are by the well-known entomological artist, Richard Lewington.

To mark the half-way stage of publication of this major series, a special, limited-term offer is being made for all volumes published to date in hardback, plus the 'butterfly volume' in preparation.

Volumes contain keys to families and species. Text consists of full description, details of life history, distribution maps, and structural drawings where necessary for identification. In addition, all species and significant variants are illustrated in colour. Each volume contains a special chapter, or chapters, on related subjects of importance in the study of British Lepidoptera. The authors of each volume are selected for their specialist knowledge of the families, or sometimes even individual species, described.

Special offer for Vols 1, 2, 7, 9 & 10 (valid until end Feb., 1987) £179.50*
(save 17½% on full retail price of £217.50)

Pre-publication offer for Vol. 7 alone (valid until end April 1987) £38.00*

Volume 1 Micropterigidae to Heliozelidae	H/B	ISBN 0 946589 03 8	£37.50
344pp, incl. 9 mono, 4 col. pls; 85 text figs	P/B	0 946589 15 1	£24.95
Volume 2 Cossidae to Heliodinidae	H/B	ISBN 0 946589 02 X	£47.50
460pp incl 16 col. pls; 16 text figs.			
Volume 7 HesperIIDae to Thyratiridae	H/B	ISBN 0 946589 09 7	approx.
approx. 350pp; 24 col. pls; 20 text figs			£47.50
Volume 9 Sphingidae to Noctuidae (Pt. I)	H/B	ISBN 0 946589 04 6	£40.00
320pp incl. 16 col. pls; 19 text figs	P/B	0 946589 16 X	£24.95
Volume 10 Noctuidae (Pt. II), Agaristidae	H/B	ISBN 0 946589 01 1	£45.00
460pp. incl. 13 col. pls; 19 text figs	P/B	0 946589 17 8	£24.95

All volumes 25 × 20cm. Hardback bound in green cloth and attractively dust-wrapped; paperback sewn and bound in strong laminated covers. Colour prospectus available.

* conditional on pre-payment: please add £6.50 per 5 vols. or £2.00 per single vol. p. & p. Published books will be sent immediately order received; Vol. 7 on publication.

British Pyralid Moths – a Guide to their Identification by Barry Goater, BSc, MIBiol.

No longer need lepidopterists have difficulty in identifying the pyralids encountered in the field, or in collections. All 208 species on the British list, including the rarest adventures, are illustrated in eight outstanding colour plates.

'... a convenient weight and size, clear to read and easy to use ... the book represents a landmark.' *Antenna*

21.5 × 15cm 176pp incl. 9. col. pls Clothbound ISBN 0 946589 08 9 £18.95*

*please add £1.50 p. & p.

Breeding Butterflies and Moths – a practical Handbook for British and European Species

by Ekkehard Friedrich (Translated from the German by Steven Whitebread, FRES), edited by A. Maitland Emmet, HonFRES

The publication of this enlarged, English edition of Ekkehard Friedrich's handbook, widely used on the Continent, fills a serious gap in the British literature. It contains detailed and illustrated instructions on Breeding Equipment and Techniques and provides Rearing Descriptions for about one thousand British and continental European species of Lepidoptera. Additional material has been contributed by Brian O. C. Gardiner on semi-synthetic diets; by Jim Reid on Geometridae; and by A. Maitland Emmet, the editor, on the microlepidoptera.

'Particular attention is given to those species which are considered generally by Lepidopterists to be difficult or troublesome to rear.' from a review of the French edition of this work, *Bulletin of the Amateur Entomologist's Society*.

25 × 20cm 176pp incl. 47 text figs
early Dec., 1986

H/B ISBN 0 946589 20 8 £20.00*
P/B 0 946589 11 9 £9.95*

* please add £1.50 p. & p.

The Spiders of Great Britain and Ireland Vols. 1–3

Special Offer!

written and illustrated by Michael J. Roberts, MB, ChB, FZS

The new definitive work on the British and Irish Araneae

Volume 2 of this highly acclaimed work, covering the Linyphiidae (which includes the difficult 'money spiders') is scheduled for publication in March 1987, when the three-volume set will be complete. In its two text volumes (Vols 1 & 2), with full pages of superbly drawn comparative text-figures, showing genitalia and other parts necessary to determine species, and in its volume of outstandingly beautiful colour plates (Vol. 3), the work concentrates on the identification of the British and Irish fauna – the main purpose of the author. Life histories and distribution details are necessarily here kept to a minimum and given only to the extent that they may confirm identification. Volume 2, the most eagerly awaited part of the work, will also include colour plates of species new to Britain since publication of the earlier volumes, together with a check list of all British and Irish species.

'this highly authoritative and beautiful work will be welcomed by all students of British arachnology who need to determine accurately their material.' *The Entomologist's Record*.

Volume 2 approx. 224 pp. incl. 4 col. pls and 100pp of text figs. ISBN 0 946589 06 2
Clothbound 29 × 20.5cm Pre-publication offer (open to end January 1987) £37.50*

Price on publication not less than £45.00

Special offer on the set ISBN 0 946589 186 (full retail price £135.00) £115.00*

*Offers conditional on pre-payment, adding £2.00 per vol. or £4.00 per set p. & p.

Published volumes will be sent immediately to those ordering the set.

For complete catalogue and/or colour prospectuses of above titles, please write or 'phone publisher.

Access and Visa cards accepted.

Also available through bookshops or specialist entomological booksellers.

Harley Books, Great Horkesley, Colchester CO6 4AH.
Tel: Colchester (0206) 271216

Butterfly Farm

(CHRISTCHURCH)

14 Grove Road East
Christchurch, Dorset
BH23 2DQ

Tel: (0202) 471336

*Suppliers of livestock and breeding
cages to schools and entomologists.*

*Wholesale suppliers of
Butterfly Farm Shop requisites.
Butterfly framing service to
the trade and collector. S.a.e. for
livestock and cage details.*

**Please note that we are
not open to the Public.**

Secondhand & antiquarian

BOOKS

**Butterflies, moths and
other entomology.**

BOUGHT AND SOLD
Frequent catalogues issued

DAVID DUNBAR

31 Llanvaio Road, London NW2
Telephone 01-455 9612

*Collections and single items
of value purchased.*

MIDDLETON INSURANCE SERVICES

Contact us for all your insurance requirements, including:—

Household insurance, incorporating:

Cover for Cabinets and Drawers

Collections at Home or whilst on Exhibition (including transit)

Apparatus kept in the Home

Equipment used in the Field

Travel insurance for Holiday, Business or Collecting

Trips in the UK or Abroad

Competitive Motor Insurance Premiums for Cars, Motor Cycles,
Mopeds, Vans, Three-wheelers etc.

Full Commercial and Business Insurance Protection

Complete Life Assurance Service, including Savings Plans, Unit
Linked and Endowment, Individual and Company Pensions,
Mortgages and Re-mortgages.

Write or Telephone **David Keen** or **John Turner** for free,
no obligation, advice and quotations.

**ORCHARD HOUSE, 53-56 PARSONS STREET, BANBURY, OXON,
OX16 8NB
TELEPHONE (0295) 66655**

BOB HENDRA

**JL. STASIUN DALAM 3G
MEDAN — SUMATRA
INDONESIA**

Specialists in
**INDONESIAN LEPIDOPTERA
and COLEOPTERA**

Price Lists on Request

**DATA
LABELS**



PROMPT SERVICE

**OVERSEAS ENQUIRIES
WELCOME**

For details and sample labels,
write to: **P.D.J. HUGO,**
115 Thrupp Lane, Thrupp
STROUD
Gloucestershire GL5 2DQ.

(Please mention this journal in your reply)

THE 3rd NORTH LONDON ENTOMOLOGICAL FAIR

SUNDAY 31st MAY 1987

PICKETTS LOCK CENTRE
Picketts Lock Lane, Edmonton, London N9

DOORS OPEN 11.00am TILL 4.30pm.

Ample free car parking adjacent to building.

MOST MAJOR DEALERS ATTENDING

Enquiries: N.L.E.F., 8 Glenville Avenue, Enfield, Middx EN2 0ER. Tel: 01-367 7940

“THE LIVESTOCK FAIR OF 1987”



COME WITH US ON AN EXCITING 1987
LEPIDOPTERIST EXPEDITION
TO THE TROPICS !!



- Guided by **Dr. Thomas C. Emmel**, Director, Division of Lepidoptera Research at the University of Florida.
- For amateur and professional naturalists, butterfly photographers, and collectors from around the world.

BRAZIL — February 11 - 22, 1987

The exciting lowland tropical rain forests of southern and western Brazil!

PERU — April 10 - 18, 1987

The incredible diversity (850 butterfly species!) of Tingo Maria on the Amazon side of the Andes, with optional cruise on the Amazon April 18 - 25!

MALAYSIA — May 16 - 28, 1987

The butterfly collector's Mecca of the Cameron Highlands, Taiping, and Penang!

For further information, write:



**HOLBROOK
TRAVEL, INC.**

We Offer You The World

3540 N.W. 13th Street,
Gainesville, FL 32609 U.S.A.

NINTH MIDLANDS ENTOMOLOGICAL FAIR

GRANBY HALLS LEISURE CENTRE
Aylestone Road, Leicester

SUNDAY, APRIL 5th. DOORS OPEN 11.00am.

Once again in the spacious Granby Halls, with all Major Dealers and Societies in attendance offering Livestock, Papered Stock, Breeding and Collecting Equipment, Books and Journals, etc, etc.

Full Catering and Bar facilities all day.

Ample parking around the venue.

ADMISSION

Adults 50p, Children under 12 years 25p.

All enquiries to

JACK HARRIS, Telephone 0455-46310

A NEW AES PUBLICATION

THE HYMENOPTERIST'S HANDBOOK

By Clive Betts and Daniel Laffoley

The Society is pleased to announce the publication of a new and completely revised second edition of this handbook.

The work covers palaeontology, phylogeny, systematics, gross morphology, natural history, studying, collecting, preserving and keys to the main families. 208 pages, 39 figs, plus 124 figs in keys. Sewn, Paperback. Price (including postage) £6.70.

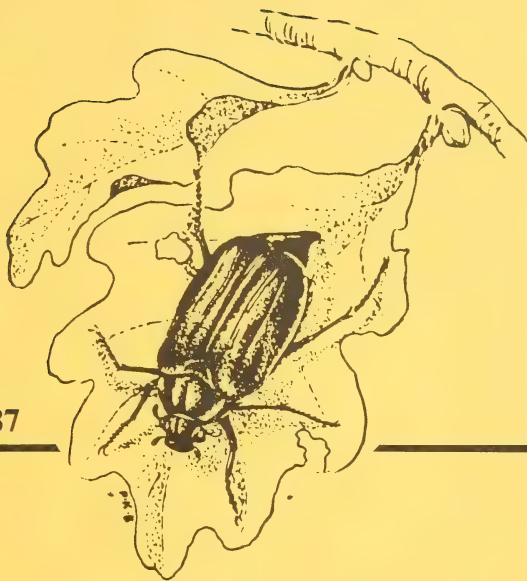
AES HANDBOOKS AND LEAFLETS

A Silkmoth Rearer's Handbook (hardback edition).	£13.00
A Lepidopterist's Handbook	£5.60
Insect Photography for the Amateur	£3.40
A Dipterist's Handbook	£7.70
Practical Hints for Collecting and Studying Microlepidoptera	£2.85
The Study of Stoneflies, Mayflies and Caddisflies	£2.85
Breeding the British Butterflies	£2.85
Breeding the British and European Hawkmoths	£2.85
The Phasmid Rearer's Handbook	£2.30
Some British Moths Reviewed and a Guide to the Critical Species	£2.85
Collecting and Studying Dragonflies	£2.30
Insect Light Traps.	£1.75
Rearing and Studying the Praying Mantids	£1.75
Rearing Crickets	£1.25
A Label List of European Butterflies	£1.85
Collecting Clearwings	£0.75
Collecting Lacewings	£1.25
Killing, Setting and Storing Butterflies and Moths	£1.75
An Amateur's Guide to the Study of the Genitalia of Lepidoptera	£1.75

Please make cheques/postal orders payable to "AES PUBLICATIONS"

AES PUBLICATIONS, 4 Steep Close, Orpington, Kent BR6 6DS

S.36A



Volume 46, No. 355, May 1987

The Bulletin of the Amateur Entomologists' Society



EDITOR
BRIAN O.C. GARDINER, F.L.S.

The Amateur Entomologists' Society

Founded in 1935

President:	S. A. A. PAINTER	126 Village Way, Ashford, Middlesex TW15 2JX.
Hon. General Secretary:	C. C. PENNEY	109 Waveney Drive, Springfield, Chelmsford, Essex CM1 5QA.
Hon. Treasurer:	R. A. FRY	4 Marennas Crescent, Brightlingsea, Colchester, Essex CO7 0RX.
Registrar:	NANCY CRIBB (Mrs)	355 Hounslow Road, Hanworth, Feltham, Middx TW13 5JH.
Hon. Bulletin Editor:	B. O. C. GARDINER	18 Chesterton Hall Crescent, Cambridge CB4 1AP.
Hon. General Editor:	P. W. CRIBB	355 Hounslow Road, Hanworth, Feltham, Middx TW13 5JH.

WHERE TO WRITE

First subscription (including entrance fee) £5, or £4 under 18, changes of address, non-arrival of Bulletins, membership applications and records.

REGISTRAR (Mrs Cribb)
Address as listed above.

Subscription renewals
£4 or £3 (under 18):

NANCY CRIBB (Mrs), 355 Hounslow Rd,
Hanworth, Feltham, Middlesex TW13 5JH.

Manuscripts, drawings and books for review:

B. O. C. GARDINER
Address as listed above.

Advertisers:

R. DYKE, 6 Grange Park Avenue,
Grange Park, London N21 2LJ.

Exhibition matters:

R. F. McCORMICK
125 Brocks Drive, North Cheam,
Sutton, Surrey.

General enquiries:

C. C. PENNEY
Address as listed above.

J.C.C.B.I. representative:

C. HART, Fourpenny Cottage,
Dungates Lane, Buckland,
Surrey RH3 7BD.

Conservation matters:

D. LONSDALE, Forest Res. Stn.
Alice Holt Lodge, Wrecclesham,
Farnham, Surrey GU10 4LH.

Wants and Exchange:

M. COLVIN
1 Sedgewick Close, Pound Hill,
Crawley, Sussex RH10 4BZ.

A.E.S. Exotic Insects Group:

C. J. ESCHBACHER, 38 Frith Road,
Bognor Regis, Sussex PO21 5LL.

**A.E.S. Insect Behaviour and
Ants Study Group:**

B. L. WILLIAMSON, 73 Little Brays,
Harlow, Essex CM18 6ES.



OPEN DAILY

Apr 1 to Oct 30

11-5 including
weekends



Worldwide Butterflies and Lullingstone Silk Farm

**LIVESTOCK SPECIMENS
ENTOMOLOGICAL EQUIPMENT**

Send SAE for CATALOGUES

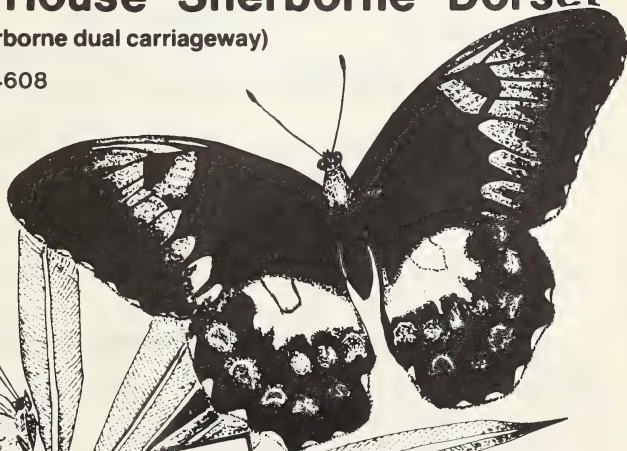


**See where unique
English silk is
produced for Royalty.**

Compton House Sherborne Dorset

(on A30 Yeovil-Sherborne dual carriageway)

Tel: Yeovil 74608



**NEW FEATURES
FOR 1987!**

**WET OR FINE
LOTS MORE TO SEE!**



THE LONDON BUTTERFLY HOUSE SYON PARK

THE WORLD'S LARGEST LIVE BUTTERFLY SAFARI

Tropical gardens under glass where whatever the weather you can stroll among FREE FLYING butterflies from all over the world. All stages of breeding. Courtship displays among exotic flowers, jungle foliage and water plants.

AN EXHIBITION

An educational collection. Live insects – giant spiders, leaf cutting ants, stick insects, praying mantis etc.

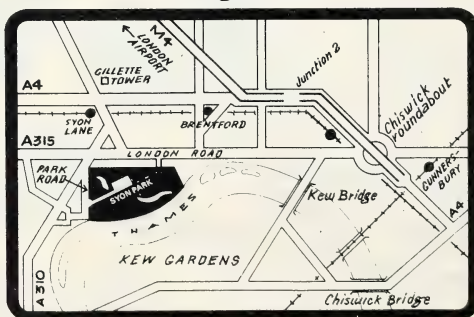
Browse around the Butterfly Shop

Gifts – all with a butterfly motif. Books and charts.
Equipment for the amateur entomologist.
Livestock for rearing at home and school.

A day out for all the family, a motor museum, the Garden Centre and Syon House itself.

How to get there

Open from 10am
to 5pm 7 days a
week throughout
the year



Special rates for
organised groups
and schools – ring
01-560 7272

FREE CAR PARK

LARVAE OF BRITISH LEPIDOPTERA NOT FIGURED BY BUCKLER

by G. M. HAGGETT

This re-publishes in a single volume eleven papers slightly revised, with colour plates, which appeared in the Proceedings of the British Entomological and Natural History Society since 1955. This is a limited edition of less than 300 copies. It is now available to non-members, price £15.00 (postage and packing £1.00 extra). In all, 150 pp. text, fully indexed, and 35 coloured plates.

Applications, with cheques or postal orders payable to the British Entomological and Natural History Society, to:-

R. F. Bretherton, C. B, Folly Hill, Birtley Green, Bramley,
Guildford, Surrey GU5 0LE

AN INDEXED LIST OF BRITISH BUTTERFLIES & MOTHS

Scientific and English Names

By J. D. Bradley and D. S. Fletcher

Available from:

J. D. Bradley, 53 Osterley Road,
Isleworth, Middx TW7 4PW.

Price:

1 Copy — £6.00 incl. p. & p.

2 Copies — £9.00 incl. p. & p.

BEE RESEARCH ASSOCIATION

**Hill House
Chalfont St. Peter,
Gerrards Cross, Bucks
SL9 0NR**

For Scientific and technical
information on Bees (Apoidea)
especially Honeybees (Apis SP)

Please write to the above address for
details of publications and
membership. A specimen copy of
"Bee World" is obtainable for 50p.

The Entomologist's Record

and Journal of Variation

A bimonthly illustrated magazine founded by J. W. Tutt in 1890, is devoted mainly to the Lepidoptera of the British Isles. It also deals with other orders of insects especially Coleoptera, Diptera, Hymenoptera, Orthoptera. Its articles include descriptions of new species and varieties, reports on collecting trips, distribution, habits and habitats of insects and of collecting and study techniques suitable for novice and expert. It circulates in 47 countries.

Annual United Kingdom subscription £15.00

Specimen copies are available from the Publicity Director,
4 Steep Close, Orpington, Kent BR6 6DS
price £1.20, postage included.

THE 3rd NORTH LONDON ENTOMOLOGICAL FAIR

SUNDAY 31st MAY 1987

PICKETTS LOCK CENTRE
Picketts Lock Lane, Edmonton, London N9

DOORS OPEN 11.00am TILL 4.30pm.

Ample free car parking adjacent to building.

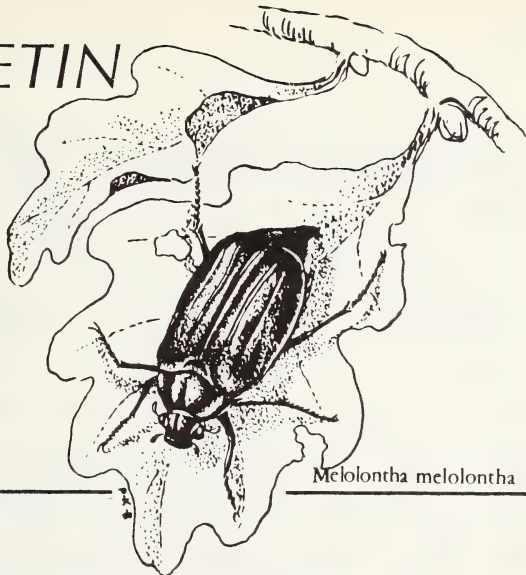
MOST MAJOR DEALERS ATTENDING

Enquiries: N.L.E.F., 8 Glenville Avenue, Enfield, Middx EN2 0ER. Tel: 01-367 7940

“THE LIVESTOCK FAIR OF 1987”

AES BULLETIN

No. 355



Melolontha melolontha

CENTENARY OF THE VERRALL SUPPER

This year marks the centenary of the Verrall Supper and in order to mark the occasion, the Association is organising a three-day conference at the University of Reading on the theme of **THE ECOLOGY OF INSECT INTRODUCTIONS**. This will take place on the 23rd-25th September. Those interested in attending should write for details to Prof. H. F. van Emden, Department of Pure and Applied Zoology, Building No. 1, Earley Gate, Reading, Berks RG6 2AT.

SYMPOSIUM ON ARACHNIDS

A One-Day Symposium on arachnids is planned for Saturday, 21st November 1987. The venue will be the Zoological Society of London, Regent's Park.

This Symposium will cover various aspects of arachnid biology, with particular reference to captive management. There will be papers on classification, husbandry, breeding and disease.

All those with an interest in spiders, scorpions and their allies will find this Symposium of interest and value. It will be of particular relevance to zoologists and naturalists who keep or study arachnids in captivity — whether in the home, private collections, zoological exhibits or laboratories.

Further information will be available shortly. In the meantime offers of papers or requests for further information should be addressed to either the Symposium Organisers, Insect House, Zoological Society of London, Regents Park, London NW1, or the Programme Co-ordinator, J. E. Cooper, Royal College of Surgeons of England, 35-43 Lincoln's Inn Fields, London WC2A 3PN.

JUNIOR FIELDWEEK**1986****26 JULY — 2 AUGUST****FIELDWEEK***Introduction*

Following the first Junior Fieldweek in 1984, a second one was organised by Duncan Reavey, now at Oxford University, and helped by his family. The same site near Brockenhurst in the New Forest was used and a similar full programme of entomological activities was followed. Twelve boys aged from 10 to 18 and two girls were present, and all had an enjoyable and rewarding time. The weather was not at its best though, and a couple of expeditions had to be cancelled or altered; namely an afternoon looking for dragonflies and an evening with a moth light. Mr and Mrs Frank Reavey were a great help during the week and the camp could not have been run without their tireless efforts.

Reports have been written by the young people themselves, and photographs illustrate some of the activities. The younger boys especially showed great enthusiasm and some of them never seemed to get tired. They were very keen to have future Junior Fieldweeks and were counting up how many they could fit in before they were 18.

I am sure it is very worthwhile for the AES to have these Junior events, and hope that more will be possible in future years.

David Copestake

Saturday 26th July

Most of us arrived between the times of 3.30 and 5.30pm and dumped all our belongings in the tents. Some of us immediately went to explore the woods by the campsite for insects.

At seven o'clock we had our first meal of the week. This consisted of mushroom soup, mashed potato, peas, apple and blackberry pie and dung beetle (it flew into the mashed potato).

After the meal, we gathered together by a tent. Duncan introduced everybody, then gave out programmes etc. and perhaps the most important piece of equipment for the whole week—a toilet roll each!

Mr Copestake gave a talk on different types of equipment and showed a variety of different nets for collecting beetles.

We put out the two moth lights and went to bed at gone midnight, as we did most nights of the week.

Corrin Higgs

Sunday 27 July

Our field sessions got off to a promising start on a dull day when three experts led us around Royden Woods Reserve. Local resident Mr Ken Halstead, Mr George Else from BM (NH) and Mr Mike Edwards covered, between them, hoverflies, Hymenoptera, spiders and just about anything else that turned up. Everyone could wander to habitats of their choice in open woodland or marsh knowing that one or other expert would be at hand to consult. The session was quite varied: highlights must have been the enormous raft spiders, the first Purple-bordered gold moth of the day, the native cockroaches and a wood ants' nest as big as they come.

Lunch on a heath set the pattern for the week and Steve Telling started on the tube of cheese spread that he made his own for the next seven days! Afterwards, Mr Tony Pickles led us through the drizzle to butterflies and day-flying moths at Setley Plain and New Copse, and there was a good chance to show off with some long species' names cribbed from copies of Tony's detailed checklist. No sooner had we heard from the 1984 Fieldweekers how impossible it was to net the Oak Eggars than Robert, Corrin and Owen had each caught one. It was worth a stop on the way back to see some impressive '*Cossus* oaks', trees showing the unmistakable damage caused by Goat moth larvae.

In the evening we were shown the fine collection of Mr Donald Russwurm, the authority on lepidoptera aberrations now held alongside the moth 'abs' from Mr Mark Middleton. They said it was the first time they'd managed to get through the whole collection in one go!

Simon Reavey

Monday 28 July

We were getting used to the chilly, misty mornings. The Safari Land Rover took us to Wootton Copse Enclosure and there Mr Colin Tubbs, Senior NCC Officer for Hants and IOW explained how the Forestry Commission and NCC are now suddenly co-operating in forest management for conservation as well as timber production. Rides had been opened to let foodplants and nectar species return but 'brash' (waste after thinning of trees) was piled up on the sides of the ride and was shading out the wild plants, and heavy machinery had turned the paths into mudbaths. Good conservation stuff, but not many insects — a few of Mr Copestake's beetles saved the day.

After lunch (and Aaron's best personal find of the week — a free wine-tasting shop) we met Col. Dougie Sterling (almost a founder member of the AES and pre-WW2 Secretary of the AES's Committee) and he showed those who were on their second Fieldweek even more about micros. Philip Sterling came down from Oxford University and the larvae of *Eupocoellia ambigua* he turned up in the alder berries made it more than worthwhile. The large marsh grasshoppers were as spectacular

as ever, but Darren tore himself away from them to save Fieldweekers (and abandoned wellies) from the depths of the bog.

Heavy rain washed out the planned MV light session, but the Sterlings enjoyed our hospitality and emergency ration biscuits while crowded into one of the larger tents and Philip told us more about his scheme for a decoy 'cow' to attract and trap horseflies (more on this in a later *Bulletin*). A late night ramble in the pouring rain — tubes and torches in hand — was great, but it was even better to get back to the Land Rover and Iron Maiden. Two full days gone and no dry clothes or boots left in the camp.

Simon Reavey

Tuesday 29 July

The day began with breakfast at 8.30 for those of the group who could get up in time.

On the way to Southampton University Simon gave us a taste of his idea of good music. This proved, to say the least, interesting. At the University we were given a talk by Professor McMullen and Mrs Jill Roberts and shown films on mosquito control and using a mono-molecular film to prevent the larvae from breathing. We were also shown the mosquito in several stages of its life cycle; however the majority of these were killed off when some of us decided to demonstrate controlling the mosquitoes for ourselves!



'In the evening some people went out looking for stag beetles without much success.'

After a quick look around the University's fossil collection and a brief lunch, our next stop was Emer Bog and a rendez-vous with Mr David Appleton. Wellies were essential and even with them if you found yourself in a bad piece of the bog you were in *deep* trouble as several people found out. The place was crawling with young frogs and toads and we found several reptiles. There was not much in the way of lepidoptera though quite a few interesting spiders, beetles and several damsel flies.

We returned to camp wet and hungry (though not for long when we saw and smelt what was cooking).

In the evening some people went out looking for stag beetles though not with much success. That night there was not much point trying to get sleep until after one o'clock as the Woodcraft Folk opposite decided to have a singsong and they did far from sing us to sleep.

Lorna Stevens

Wednesday 30 July

Duncan made us get up at 7.30am but we didn't wake up until 8.00am!

We went to the New Forest Butterfly Farm for the morning. Mr Terry Jenvey, the manager, introduced us to the Farm which was split up into three main sections:

- (i) Tropical butterflies
- (ii) British butterflies and migrants to Britain (eg Clouded yellow)
- (iii) Outdoor dragonfly pond with a few insectivorous plants.

There was also the usual exotica such as stick insects, scorpions, tarantulas etc. I feel that a little more information about each creature on display wouldn't have gone amiss though — most of them were just named.

Lunch was on a railway embankment in the Lower Test Nature Reserve in Nursling — ultra-enthusiastic Darren and Steven disappeared looking for insects as usual.

Then we set off on a long drive to Old Winchester Hill on the South Chalk Downs (GR: 685 025) — Mr Simon Kingston, an NCC warden, pointed out how careful land management (involving fencing, sheep grazing and strict paths) has led to three different habitats on the open chalk downs favoured by different butterfly species:

- (i) Short grass (less than 5 cm) — Chalkhill blue.
- (ii) Longer grass (less than 30 cm) — Dark green fritillary.
- (iii) Longest grass (greater than 30cm) — Meadow brown.

Some 14 species of butterflies were seen, but it was too early to see the Adonis blue which has been reintroduced to the area.

Mr Copestake said that by the end of July the chalkland was really too dry for beetles and most would be dead or aestivating. However, there were a few beetles on flowers and in dung and fungus.



Fig. 1. The Fieldweek Team 1986. *On the Landrover:* Corrin Higgs, Martin Clark, Owen Lewis, Lucas Partridge, Darren Mann, Stephen Copestake. *Standing:* Mr David Copestake, Mr Frank Reavey, Mrs Jean Reavey, Anne Piatkus, Duncan Reavey, Simon Reavey, Steven Nash, Aaron Hunsberger, Lorna Stevens. *Front:* David Fitter, Steven Telling, Robert Fitter. *Gone but not forgotten:* Ian Stephenson.

After dinner we went with Tony Pickles to Lymington Marsh (GR: 325 965) at about 9pm and set up two MV moth traps but trapped few species because it rained continuously all evening (hardly deterred the midges though!). We therefore broke up early at 10.30pm and returned to a welcome hot cocoa drink. This was followed by a singsong from the rapidly enlisted AES choir accompanied by a cutlery band which probably woke up the whole camp — must have been something in the cocoa!

Lucas Partridge

Thursday 31 July

At 10.45am we arrived at Holidays Hill Enclosure, where Mr Tim Winter told us about the problems of a Forestry Commission entomologist. He said that most of the problems are caused by insects which become pests of trees grown for timber. A new pest is the Great Spruce Bark beetle which attacks Sitka spruce and since there are thousands of acres of planted Sitka spruce in Britain it would be expensive if it became established. The female lays eggs inside a chamber behind the bark and makes little notches around the chamber so the young start boring into the bark in different places. We also learnt a lot about insects that strip oaks bare, eg Winter moth and Oak leaf roller moth.

After a quick look at the New Forest reptiliary where we saw lots of snakes and lizards, we had lunch at the Land Rover. We were supposed to be looking at dragonflies and grasshoppers with Mr Dave Winsland in the afternoon but the weather wasn't hot enough so we had some spare time at camp. Most of the time we were in the forest looking for insects, under logs and by beating trees. I didn't find much, only a few caterpillars and flies. Then, after talking dragonflies with Mr Winsland over dinner, we went Stag beetle hunting. We didn't find any Stag beetles but we did find a Lesser Stag beetle! It was smaller in body length and width and had smaller pincers than an ordinary Stag beetle. We didn't get to bed until late, as usual!

David Fitter

Friday 1 August

After a quiet breakfast at the anti-social hour of 7.00am we had a very long drive, including a very short ferry trip, to Studland Nature reserve, Dorset. It was the first sunny day we'd had and the sea looked very inviting but it wasn't long before Duncan called us over to meet the morning's expert, Mr Rees Cox.

Mr Cox took us around the sand dunes where we found a variety of insects including some interesting dragonflies, and then through some almost impenetrable scrub, '... to make the walk more interesting' he said.



Fig. 2. Anne learns even more about micros.

We lunched at Corfe Castle where we met Dr and Mrs Fitter and their daughter who were to come on the Dorset Cliff walk. They had sensibly provided their own lunch!

The Cliff Walk was fairly uneventful until we reached Dancing Ledge. Here Mr Copestake and I took a well earned rest while the others went down to the sea. Luckily for Darren I didn't see what happened next so I will have to take his word for it that it was an accident. Anyway, with Darren's help Corrin fell into a very large rockpool. Darren did jump in after him but rumour has it that by this time Corrin had got out.

The remainder of the walk was pleasant and happily uneventful, apart from finding some Great green grasshoppers. It tried very hard to rain though and people kept wondering if we were lost(which we were not as far as I know!).

The walk ended at Durlston Country Park where there was an interesting exhibition.

We then had a terribly long and uncomfortable journey back to camp (*Never again!* — DR) and just ten minutes to stretch our legs before going off to Lepe Beach for a barbeque which everyone enjoyed in spite of the pouring rain.

Because of the weather we decided to go back to camp for the 'traditional' award ceremony. This consisted of awards such as 'Most Original Way to Spill Soup' award (which went to Owen) and 'Leo Sayer Look Alike' award.

After a kazoo solo of Auld Lang Syne from Duncan the few sane ones among us went thankfully to bed!

Anne Piatkus

The Ups and Downs of the New Forest

The week we spent in Brockenhurst

The weather wasn't fine,

It finished in a cloud burst

From six to half past nine (am).

Whenever we put the moth trap out,

It suddenly started to rain,

Which meant there weren't many moths about—

That really was a shame.

But on the days with sunny skies

The insects buzzed in hordes,

We chased the beetles, bugs and flies

So we were never bored.



Fig. 3. "It must be some kind of Lycosid".

Chasing butterflies all day
Made us want our food,
Even though the cement-like smash
Had to be chewed and chewed and chewed.

The food was really very good
Especially the soup,
I drank six cups of that one night,
Enough for all the group.

Robert Fitter (aged ten)

Orthoptera recorded during the AES Fieldweek

Anyone who has a definite interest in Orthoptera will at some time visit the New Forest, for as an area for Orthoptera its total of 23 native species is only surpassed by that of the Isle of Purbeck. The Meadow grasshopper (*Chorthippus parallelus* (Zetterstedt)), the Long winged conehead (*Conocephalus discolor* (Thunberg)) and the Dusky cockroach (*Ectobius lapponicus* (L)) were found at most sites, whereas the Common field grasshopper (*Chorthippus brunneus* (Thunberg)) was only found at three sites, probably due to lack of searching.

Roydon Woods Reserve (SU 305004) was the most productive site with a total of ten species being recorded. This was the only place where the Lesser cockroach (*Ectobius panzeri* Stephens) was found. The Bog bush cricket (*Metreoptera brachyptera* (L)), the Wood cricket (*Nemobius sylvestris* (Bosc)) could be seen around the heather and in small bare patches, also in the bare patches the Woodland grasshopper (*Omocestus rufipes* (Zetterstedt)) was in abundance.

The Oak bush cricket (*Meconema thalassina* (Degeer)) and the Speckled bush cricket (*Leptophyes punctatissima* (Bosc)) were very common in the woods around the campsite. The mottled grasshopper (*Myrmeleotettix maculatus* (Thunberg)) was only found at Setley Plain (SU 298002) where it was common amongst the gorse bushes.

On the Dorset Cliff walk we found the largest Orthopteran of the week, the Great green bush cricket (*Tettigonia viridissima* (L)) alongside the Dark bush cricket (*Pholidoptera griseoaptera* (Degeer)) in a meadow. The most colourful species found during the week was the Large marsh grasshopper (*Stethophyma grossum* (L)) which could be seen sitting on the long grass and heather at Matley Bog (SU 335071). The Common green grasshopper was found in profusion at Emer Bog SSSI (SU 413205).



Fig. 4. Another good question for Tim Winter.

The Short-winged conehead (*Conocephalus dorsalis* (Latreille)) was found as both adults and nymphs at Lower Test Valley Reserve (SU 368153). The Tawny cockroach (*Ectobius pallidus* (Oliver)) was found at Studland NNR where it could be beaten from the heather. This was also the only site to produce the Lesser marsh grasshopper (*Chorthippus albo marginatus* (Degeer)).

The Heath grasshopper (*Chorthippus vagans* (Eversham)) and Cepero's ground hopper (*Tetrix ceperoi* Bolivar) which were recorded in the 1984 Fieldweek managed to escape detection. But overall not a bad week for Orthoptera with a total of 19 species being recorded.

Darren Mann

The Coleoptera of the Fieldweek

Unfortunately the height of summer, the end of July and beginning of August, are not very good months for beetles. The ground is generally very dry and many species of beetles are in juvenile stages of development and the adults have died off.

Some of the habitats we collected at were very good and consequently there were a lot more beetles captured than Mr Copestake expected. A lot of beetles were caught around the campsite by beating the oak trees which surrounded the field. In the wood near the campsite Mr Copestake set several carrion traps which caught mainly ground beetles, although some carrion beetles were found.

On the Wednesday evening, which we had free, quite a few of us went to Lymington to hunt for stag beetles in Priestand's Lane (the Bunny Run). The trip wasn't completely successful as only one female was caught.

Out of all the species of beetle caught, the most notable were as follows:

Licinus punctatulus (Fab.); *Dorcatoma flavicornis* Fab.; *Leptura fulva* Degeer; *Strangalia quadrifasciata* (Linn.); *Apion sanguineum* (Degeer); *Prionychus ater* (Fab.); *Cassida muraea* Linn.

Stephen Copestake

Butterflies on the Fieldweek

Butterfly records suffered more than those of many other Orders due to the dull (and often damp) weather during the week. However, we did manage to record 27 species during Fieldweek (28 if Green hairstreak larvae found on gorse at Studland are included). These butterfly sightings make an interesting comparison with those noted in 1984.

Chalkhill blues were far less abundant at Old Winchester Hill — only males were recorded — reflecting the late season this year. This species was also noted on the Dorset cliffs, and two males seen at Shawford Down were an interesting find. Holly blue and Brown argus (both recorded in 1984) are absent from the 1986 list, and only two Lulworth skippers were seen at Corfe Castle this year.



Fig. 5. Darren, champion of latin names.

On the other hand, Silver studded blues were abundant on all New Forest heathlands. Ringlet and Marbled white were common in their respective habitats — woodland and grassland — while both White admiral and Purple hairstreak appeared in good numbers.

Surprisingly (and probably due to the weather) only one Silver washed fritillary was seen — a male flying in brilliant sunshine as we packed away the tents on the final morning!

Owen Lewis

Notes on the Moths

Two portable Heath Traps were used at the camp-site during the fieldweek, both positioned facing the woodland.

The weather was not good throughout the week, being both cold and wet — certainly not ideal for attracting moths.

The following species were recorded in small quantities:

NOCTUIDAE

<i>L. porphyrea</i>	True lovers knot
<i>C. coryli</i>	Nut tree tussock
<i>N. pronuba</i>	Large yellow underwing
<i>A. exclamationis</i>	Heart and dart
<i>E. similis</i>	Yellowtail
<i>P. bucephala</i>	Buff tip
<i>E. lurideola</i>	Common footman
<i>T. batis</i>	Peach blossom
<i>L. monacha</i>	Black arches
<i>P. palpina</i>	Pale prominent
<i>E. chrysorrhoea</i>	Browntail
<i>A. monoglypha</i>	Dark arches
<i>H. nemoralis</i>	Small fanfoot
<i>D. brunnea</i>	Purple clay
<i>C. pyralina</i>	Lunar spotted pinion
<i>B. viminalis</i>	Minor shoulder knot
<i>D. binaria</i>	Oak hooktip
<i>M. impura</i>	Smoky wainscot

GEOMETRIDAE

<i>B. roboraria</i>	Great oak beauty
<i>H. furcata</i>	July highflier
<i>B. betularia</i>	Peppered moth
<i>A. repandata</i>	Mottled beauty
<i>P. rhomboidaria</i>	Willow beauty
<i>E. erosaria</i>	September thorn
<i>H. aestivaria</i>	Common Emerald

<i>L. marginata</i>	Clouded border
<i>I. dimidiata</i>	Single dotted wave
<i>E. bistortata</i>	Engrailed
<i>C. margaritata</i>	Light emerald
<i>I. aversata</i>	Riband Wave
<i>C. punctaria</i>	Maidens blush
<i>L. adustata</i>	Scorched carpet
<i>O. luteolata</i>	Brimstone
<i>P. hippocastanaria</i>	Horse chestnut
<i>S. liturata</i>	Tawny barred angle

MICRO

<i>T. viridana</i>	Green oak tortrix
--------------------	-------------------

On the evening of the 30th July the large MV trap and generator were taken to Pennington Marshes near Lymington.

The following species were recorded:

NOCTUIDAE

<i>A. exclamationis</i>	Heart and Dart
<i>L. monacha</i>	Black Arches
<i>A. monoglypha</i>	Dark Arches
<i>M. impura</i>	Smoky Wainscot
<i>M. straminea</i>	Southern Wainscot
<i>M. obsoleta</i>	Obscure Wainscot
<i>A. phragmitidis</i>	Fen Wainscot
<i>M. literosa</i>	Rosy Minor
<i>M. secalis</i>	Common Rustic
<i>O. plecta</i>	Flame Shoulder
<i>P. fuliginosa</i>	Ruby Tiger
<i>A. puta</i>	Shuttle-shaped Dart
<i>H. humuli</i>	Ghost Swift
<i>A. putris</i>	Flame
<i>H. pyritoides</i>	Buff Arches
<i>S. libatrix</i>	Herald
<i>X. triangulum</i>	Double Square Spot
<i>N. janthina</i>	Lesser Broad-bordered Yellow Underwing
<i>M. fimbriata</i>	Broad-bordered Yellow Underwing
<i>A. lithoxylea</i>	Light Arches

GEOMETRIDAE

<i>H. furcata</i>	July Highflier
-------------------	----------------

Steve Nash

Miscellaneous Insects

The following lists are of insects that I collected in and around the New Forest during the AES Fieldweek.

Diptera

The Diptera that I collected were either identified in the field or taken back to the campsite, set, and taken home with me and identified with the aid of a microscope.

SYRPHIDAE

Platycheirus clypeatus (Meigen)
Chrysotoxum bicinctum (L)
Leucozona lucorum (L)
Scavea pyrastris
Sphaerophoria sp. (female)
Syrphus ribesii
S. vitripennis Meigen
Xanthogramma pedissequum (Harris)
Cheilosia bergenstammi Becker
C. illustrata (Harris)
Ferdinandea cuprea (Scopoli)
Legogaster matallina (Fabricius)
Eristalis arbustorum (L)
E. intracarius (L)
E. nemorum (L)
E. pertinax (Scopoli)
E. tenax (L)
Myathropa florea (L)
Helophilus hybridus Loew
H. pendulus (L)
Sericomia silentis (Harris)
Volucella pellucens (L)
Syrpitta pipiens (L)
Xyloa abiens Meigen (Red Data Book 3)
X. segnis (L)
X. sylvarum (L)
Episyrphus balteatus (Degeer)

TABANIDAE

Chrysops caecutiens (L)
C. relictus Meigen
C. vidvatus Fabricius (Notable)
Hematopota pluvialis (L)
Tabanus bovinus (L)
T. maculicornis Zetterstedt
Hybomitra distinguenda (Varrall)

ASILIDAE

Dioctria atricapilla Meigen
D. rufipes Degeer
Dysmachus trigenus Meigen
Neoitamus cyanurus Loew

TACHINIDAE

Linnaemya vulpina Fall

TIPULIDAE

Tipula maxima Poda

STRATIOMYIDAE

Nemotelus pantherinus (L)
Odontomyia viridula Fabricius (Notable)
Chloromyia formosa Scopoli

CONOPIDAE

Sicus ferrugineus (L)

MUSCIDAE

Mesembrina meridiana (L)

Hemiptera

The Hemiptera that were collected were all set and taken back home with me where they were identified with the aid of a microscope.

MIRIDAE

Deraeocoris ruber (L)
Heterotoma merioptera (Scopoli)
Phytocoris sp.
Stendodema trispinosum (Reuter)
S. calcaratum (Faller)
Leptopterna dolabrata (L)
Notostira elongata (Geoffroy)
Cyllocoris histrionicus (L)
Trigonotylus ruficornis (Geoffroy)

CIMICIDAE

Anthocoris nemorum (L)

GERRIDAE

Gerris lacustris (L)

BERTINIDAE

Cymus glandicolor Hahn

ACANTHOSOMIDAE

Elasmotethus interstinctus (L)
Elasmucha grisea (L)

CYDNIDAE

Sehirus bicolor (L)

SCUTELLERIDAE

Eurygaster sp. nymph

PENTATOMIDAE

Piezodorus lituratus (Fabricius)
Pentatoma rufipes (L)
Picromerus bidens (L)

Odonata

The Odonata were identified in the field with reference to Hammond and help from Owen Lewis.

ZYGOPTERA

Calopteryx splendens (L)
C. virgo (Harris)
Lestes sponsa (Hansemann)
Pyrrhosoma nymphula (Sulzer)
Ischnura elegans (Van der Linden)
Enallagma cyathigerum (Charpentier)
Ceriagrion tenellum (Villiers)

ANISOPTERA

Cordulegaster boltonii (Leach)
Aeshna cyanea (Muller)
Anax imperator (Leach)
Othetrum coerulescens (Fabricius)
Sympetrum striolatum (Charpentier)
S. sanguineum (Muller)

Neuroptera

The only specimen that was kept was a female Snake fly, which was identified with the aid of a microscope at home.

RHAPHIDIIDAE

Raphidia xanthostigma (Schummel)

I should like to express my thanks to Adam Wright, Ray Barnet, Steve Lane and John Pietrarczyk of the Herbert Art Gallery and Museum, Coventry for their help in the identification of the above insects.

Darren Mann

Postscript

How did it all compare with 1984?

Well, those who came for a second time must have noticed the accent on ecology and the greater range of habitats and insect orders. It was just as well considering the mixed weather and we were very lucky to have our resident counsellor Mr David Copestake who could always be relied on to turn up an interesting beetle in a log, a cow pat or an oak tree. Our other volunteer experts — 16 of them — battled against the drizzle to provide the action. Our thanks, too, to the Forestry Commission, Lyndhurst; to Cambridge University Press and AIDGAP for donating field identification keys; to Associated Tyre Specialists, St Mary's College, Southampton, and Dr Martin Speight of the Zoology Department, Oxford University; and most of all to Mr and Mrs Frank Reavey who dealt with *all* the administration and who disobeyed the camp rules by helping even heroic Fergie, Andy, Runcie and The Other One (sorry, 'in' joke) with the cooking and washing up.

It's time to think about further Fieldweeks — their frequency and the availability of organisers and field leaders. Perhaps there will be a chance to get somewhere where the sun, the insects and a dry barbecue are a bit more reliable. Don't just watch the *Bulletin* to see what happens — let us have a few ideas. The standard of kazoo playing on the last night suggests at least one innovation next time — a camp band called, perhaps, the 'Junior Ento-tainers' (groan!).

Duncan Reavey (6934)

Simon Reavey (8161)

RARE MIGRANT HAWKMOTHS IN STAFFORDSHIRE

Three previously unpublished records

by Jan Koryszko (6089)

THE DEATHSHEAD (*Acherontia atropos*). The first example of this species was taken flying round a light in Meir library by the late Mr Twigg in the autumn of 1968 and the following spring (May 22nd 1969) I took another example which was sitting on a lamp-post just across the road from the library. These two specimens are now in the collection of the City Museum and Art Gallery, Hanley, Stoke-on-Trent.

THE CONVULVULUS (*Agrius convolvuli*). In 1970 a passerby found a specimen lying on Sandon Road, Meir, and he took it to Mr D. Heath in whose collection it remains.

WHITES ROOSTING ON THE DOGWOOD BUSH

by Jan Koryszko (6089)

For many years now there has been a large dogwood bush in my garden at Meir, Staffordshire, and this seemed always to attract all three species of the "whites" (large, small and greenveined) and even a male brimstone. They often roost on this bush for the night and also in bad weather. When the sun is out I have seen females settled on it awaiting the males and then pairing taking place. Spring and summer during every day the bush gets visited by these whites and when at roost they are quite hard to detect on the green and white leaves.

In view of these observations I planted two more dogwoods in the garden and both gave the same result, being equally attractive as the original bush. I once found over a dozen butterflies on the one bush and have shown it to fellow member Mr R. H. Heath. We are both agreed that the dogwood is a very useful plant to have around for lepidoptera. Besides a roosting and pairing site for the whites it is a useful foodplant for a number of species.

CONCERNING MUSEUMS AND COLLECTIONS

1. AN OVERVIEW

By The Editor

The article by Gordon Trebilcock *Concern for Collections* (*Bulletin* 45:67-68) has created not a little interest and we publish below the response received from two members of the Museum profession. Clearly the majority of Museums do take their responsibilities seriously and are always going to be as helpful as possible. It was rather sad, therefore, that we received from a member the exception to this, his voluntary help being spurned when he offered it after observing that their insect collections were in a disgraceful state. Due to possible legal complications it is necessary to retain anonymity.

As the result of making enquiries, however, we learnt that the museum in question is badly underfunded and understaffed, even senior officers having to do their own typing; when, that is, they even have time to answer letters at all in view of more pressing and urgent duties. One unfortunate facet of this understaffing has been inadequate supervision with the result that not only has vandalism occurred, but actual theft of entomological material. Unless an increase in funding can be obtained, an unlikely event in view of the present Government's stringent financial controls, it seems that the only answer effectively to put a stop to such disgraceful behaviour is to close the museum, an action that would negate its very purpose of serving and informing the interested public.

This stealing problem is by no means confined to this one museum. Theft of valuable specimens has occurred from both National and University museums in the past, both in this country and abroad (see for instance *Bulletin* vol. 34 pages 38 and 160) and, sadly, may well happen again. It is not only entomological material that is taken; pictures, fossils, silver, antiques, books. Of these last, Lewin's *The Insects of Great Britain* and Mouffet's *Theatre of Insects* were taken, with others, from Durham University Library some years ago. However good the security and supervision the really determined thieves can usually manage it, but what is so regrettable is the fact that so often, when caught, the thief has turned out to be an individual who has been trusted and given access to the collections. No amount of staffing and security can overcome this problem.

It is only too sad a fact today that the actions of a few totally irresponsible individuals spoil things for the law-abiding majority. It has not, therefore, been wanton neglect or indifference that has resulted in the state of affairs found by our member, but a series of misfortunes compounded by lack of resources to carry out the amount of work that is required to cope with all the many problems that arise and, as they are put off, so does the problem multiply. Nevertheless, in spite of the problems that might arise in accepting voluntary help, it does seem a

shame that it has not been accepted and that the collections, we have been informed, continue to deteriorate.

There are, however, some quite valid reasons just why voluntary help cannot always be accepted and where it is considerable consultation and a suitable administrative protocol have usually been organized in advance and procedures agreed. Where such does not already exist, therefore, a refusal of help does not imply a direct rebuff but rather a lack of procedure for accepting it.

That understaffing is no local problem is proved by the fact that even that most prestigious of museums in Cambridge, the Fitzwilliam, (which does accept voluntary unpaid help) is now only half open at any one time and with a potential two million visitors on short stay who might like to view, how frustrating to find the items you want to study, or just view, closed until tomorrow!

Anybody who has a collection of any sort must know that it needs inspecting regularly otherwise the rot sets in. Rot can take many forms, museum beetle, damp followed by mould, dust, shrinkage caused by excessive central heating (overheating also causes books to become brittle and leather to powder), fading due to excessive exposure to light, breakage due to careless handling. How often I have seen a ruined collection, not just of insects, but also of books, pictures and even very valuable furniture, which has been wrongly stored and neglected either because the owner was incapable by reason of age or infirmity or because "I was left it by grandfather and put it in the attic 20 years ago". Another point to bear in mind is that it costs money to store anything. Room has to be provided which involves capital cost, or rent, and rates have to be paid; heating can be a considerable expense for no collection is really safe in an attic which is subject to great extremes of both heat, cold and humidity. The larger the collection is then the more these costs are going to be, and many museum collections now are like painting the Forth railway bridge; by the time you reach the end it is time to start again at the beginning, so we are left with a never-ending task which increases as more and more material finds its way into the museum. Unless staff and space can also be increased there comes a time when it bursts at the seams and something will have to give. In the present political climate finding increased resources is almost impossible as it is given the lowest possible priority by many politicians.

It goes without saying, however, that in the circumstances the staff of our National and Provincial museums do their best to guard the treasures that are in their charge. On the whole, too, the public is not generally aware that for every item on display there will be ten or a dozen stored away (in the case of insects and other small objects perhaps hundreds, even thousands, are 'behind the scenes') and that these require regular inspection and conservation to safeguard them. It is not that generally

these stored items are in any way 'inferior' to those on display; they are just as interesting and valuable and will often be rotated into the display area as and when a change is thought desirable and mostly they may also be viewed and studied by appointment. Indeed it needs to be pointed out, for it seems that many are unaware of the fact, that enquiries to study in Museums are welcomed and this is particularly so when the object of the study is a specialised one for which perhaps no member of staff is qualified or due to other duties has time for.

It needs to be pointed out that the ethics of National and Provincial museums are different to those of Universities and the appalling example set recently by Newcastle in selling abroad an important ethical collection (they were enabled to do this by selling the items individually and not as a collection) cannot happen with other museums. The question of selling off old 'fixtures and fittings' is another matter altogether. These become outdated for modern concepts of display and storage and indeed the majority of British insect cabinets were designed to accommodate the short 'British' pin and not the Continental long pin. Many of those left to Museums with their contained collections are by no means up to the standard of a 'Brady' or a 'Gurney' and admit not just pests but dust and draughts — doing no good at all to their contents. The cork used, too, may have become so hardened with age as to bend pins and so break specimens when they are moved. The modern concepts of conservation, which is leading to greater safety for the actual specimens, requires standard units.

2. A CURATOR'S VIEWPOINT

by Adam Wright (8508 A)

(Herbert Art Gallery and Museum, Coventry)

I feel compelled to write in response to the article by G. Trebilcock, entitled "Concern for Collections" (1986, *Bull. amat. Ent. Soc.*, 45 : 67-68). Whilst I am sure that the article was written with the best intentions, with respect to safeguarding local collections, it shows a lamentable lack of knowledge of museum practice and the current "state of play" in many provincial museums.

As a Natural History curator with responsibilities for significant entomological holdings, I would like not only to take issue with several points raised by Mr Trebilcock, but also to demonstrate how many provincial museums already fulfill the important role which Mr Trebilcock was anxious to innovate.

Hopefully the following points will prove of interest.

(i) Prospective donors will doubtless be relieved to learn that NO "proper" museum — national or provincial — sells off collections which it receives. This is in direct contravention of the accepted Museums

Association "Code of Practice" and is an action which would not be countenanced by a professional member of museum staff. Collections donated to the national museums but not required by them, are redirected to the relevant provincial museums.

(ii) The concept of selling parts of a collection ("spare material") in order to utilise the proceeds for "the needs of the collection and museum" is also an alien concept. A collector makes a collection of specimens, which together with his notebooks and records form an entity — an important piece of historical and scientific evidence. The significance of the collection is diminished if that collection is pillaged at a later date, for whatever reason (even if only the "commoner" species are removed).

(iii) There are many valid reasons why it is impractical for a regional entomological collection to be maintained and curated within a local museum by volunteer staff. Furthermore, at present most museums employing full-time Natural History staff have reasonable local entomology collections — the idea of forming regional "centres of excellence" for entomology could mean that many people would have to travel much further in order to gain access to a collection, since the tendency would be for most donations to be offered to the appointed regional centre rather than the nearest town with a suitable existing collection and staff. Thus, using Mr Trebilcock's "Wessex" example, if Exeter was chosen as the regional centre it would be frustrating for those living in Penzance or Bournemouth. (Incidentally, of the two suggested possible "centres" in Wessex, Salisbury is an unlikely venue since they currently employ no Natural History staff, and Exeter already has fine entomological collections, which are available for use by the public by appointment with the Natural History staff. These collections are regularly used by researchers.)

(iv) The concept of charging for access to museums' collections is one which curatorial staff in museums are nearly all opposed to, and one which is only realised as a last resort.

(v) The accusation that most provincial museums are not concerned with obtaining entomological collections and/or records of regional interest is, of course, ludicrous. Whilst many museums are prevented from becoming "more involved" due to understaffing problems, most Natural History curators will make efforts to ensure that their collections are as accessible as possible to those wishing to view or use them.

Indeed, I have been to considerable pains to publicise the collections in my care and encourage their full utilisation (Wright, A. 1986 "Featured Museum No. 3 — The Herbert Art Gallery and Museum, Coventry" *Bull. amat. Ent. Soc.* 44, 346: 26-29). By making an appointment to visit, anyone (entomologist or not) may view our collections. We provide an area for researchers and volunteers to undertake work on the

collections and our specialist entomological library is also made available, together with microscope facilities. Furthermore, the museum houses and makes available Biological Records for the Coventry area, and the records for Hymenoptera (Symphyta and Aculeates) and certain Dipterous groups for Warwickshire. (I am County Recorder for these groups.)

Thus I would contend that important regional entomological collections already exist in most areas of Britain within provincial museums, and that few if any museums holding such collections would dissuade people from utilising these collections. Furthermore, most provincial museums are keen to obtain more relevant entomological material and records (I am certainly eager to do so) and to encourage local researchers and recorders. I can only suggest that Mr Trebilcock has either not yet contacted his local museums with Natural History staff, or, alternatively, has had an extremely unusual and unfortunate experience if he has done so.

3. CONCERN FOR COLLECTIONS: A BROADER VIEW

by J. H. Mathias

Editor BCG Newsletter and Keeper of Biology

Leicestershire Museums Service

96 New Walk, Leicester LE1 6TD.

As curator of the large, mainly local entomological collections of the Leicestershire Museums Service, I read with interest, but, I must confess, a growing sense of unease, the article 'Concern for Collections' by G. Trebilcock in the *AES Bulletin* (vol. 45, p.67). It brings up a number of points which warrant further discussion on the nature of collections, our public collections and the role of the professional curator.

I agree wholeheartedly with Mr Trebilcock's point that it is a tragedy when a life-long collector dies and his (or her) 'collection' is dispersed. But of what does a 'collection' comprise and how many people are in a position to assimilate extra collections in their entirety?

It is a brave collector who tries to put all the data associated with an insect specimen on the label on its pin. Most collectors keep full collecting records separately in a data book and cross reference to the specimen, perhaps through a numbering system; it goes without saying that the book and specimens form a unit which should not be divided. Similarly many collectors annotate their reference books with working notes; they mark their maps to indicate collecting locations; they build up a body of correspondence relating to specimens (cross-referenced, we hope); they make notes on what they have seen and where they have seen it.

These are all vital components of the entity we, as professional curators, call the 'collection'. Taking all these elements into account, a collection can be both broad in scope and large in volume so that it represents a major investment in space, time and effort (all of which can be costed) for the person or institution to which it devolves.

Just as it can be considered irresponsible of the collector not to make provision for the disposal of his collection after his death (or change of interest!), it is surely equally irresponsible for an individual or institution to take on a collection without appreciating the full implications. Acceptance of a collection carries responsibilities: it should be catalogued before being absorbed so its original state and extent is documented; the catalogue should be made available to serious workers; access to specimens should be allowed (especially where they support published work); notebooks, associated reference works, correspondence and documentation should be held as an archive — if not discreetly then at least in an easily-retrievable system. Most importantly, the new owner should use the collection, not just sit on it, otherwise it exists in a vacuum. I can envisage very few circumstances in which parts of a collection should be sold off as Mr Trebilcock suggests, and equally few where serious entomologists should be charged to use it (despite the fact that this is current British Museum (Natural History) policy to which I and the majority of my colleagues in provincial museums object most strongly).

The local museum, assuming it has natural history collections and specialist staff, is in a unique position to care for collections in the manner outlined above. According to a recent survey (Museums Association, *in press*), there are some 254 institutions in the UK holding biological collections, a quarter of which have a full time natural history curator; 32 of these have special expertise in entomology. As might be expected, the distribution of these institutions is not equal, the northern and western parts of Britain being least well provided for, the south-east the best. Even allowing for this, in an age of efficient personal transport most entomologists should be within reach of substantial, professionally curated collections.

Many institutions now have declared policies on the range of their collecting and the reasons for it (for Leicestershire it is published in 'Towards a Policy' (Boylan 1977) and I am sure most of them will agree that their main strengths are their local study collections.

It is the responsibility of the curator not only to conserve the specimens in his care but also to promote interest in, and stimulate work on, the collections so they are used to maximum effect. The obvious place to start is with the local naturalists, and the curator should advertise his museum's holdings and services through local societies, conservation trusts, personal contacts, identification workshops and publications.

Leading from this, another responsibility of the curator should be to know where the significant, privately owned collections are in his area so that if, as Mr Trebilcock points out, the worst happens and the collector dies, without making adequate provisions, enquiries can at least be made of executors as to their intentions regarding the collection. In my experience it is at this point that collections become split — by this I mean specimens become separated from notebooks, correspondence etc, and the value of the collection is immediately reduced.

If these are the responsibilities of the curator (and I freely admit that commitment to these ideals varies according to external pressures), then the collector must also recognise his responsibilities. He may feel secretive and defensive about his collection and resent enquiries from the local curator 'fishing' for his specimens. While I can sympathise with this attitude to a degree I do not believe it to be supportable. The building of a collection involves more than just the taking of specimens — a wealth of knowledge is also accumulated and, as Mr Trebilcock rightly points out, in a countryside that is rapidly changing, collectors surely have a duty to pass on and make available their lifetime's observations (in the form of published works, notes, records etc.) as well as specimens. It is only from this kind of resource that we are now able to assess how fast and to what extent the environment has changed over the past century. So, when collectors and natural historians sit down to contemplate their mortality, it is important that they know what options are open to them for the eventual disposal of their collections (and that the name of the nearest local museum with a natural history curator should be near the top of the list).

Mr Trebilcock suggests the establishment of a network of regional collections in museums. It will be clear from the above that such a network already exists, although it is stretched through lack of resources in some areas. What concerns me is that Mr Trebilcock did not know about it. This points to a particular failing of some local museum curators — a patchy facility to advertise the resources (collections, documents, library, maps, records, staff expertise) at their disposal within the community which could make best use of them — local collectors and naturalists. This has been noted as an area for concern by the Biology Curators' Group (a national group of people, mainly museum curators, concerned with the care and promotion of natural history collections) which is now becoming increasingly involved in survey and promotional initiatives to increase knowledge about, and use of, local collections and to attract government resources to museums which are having difficulty in maintaining basic curatorial standards. An initial survey was published in 1980 (Hancock and Morgan) of the extent of the biological collections held in provincial museums in Britain. A glance at this would have told Mr Trebilcock, to take his own example, that Exeter Museum then had 1,520 Hemiptera, 123,739 Lepidoptera and 34,267

Coleoptera in its collections, all of which would, I am quite sure, have been made available for him to examine on request. A much more detailed survey, instigated by BCG but administered by the Museums Association, was recently completed and is due for publication later this year (Museum Association, *in press*). This goes much more thoroughly into staffing, facilities, resources and the like, and its objective is to focus the attention of the people who hold the purse strings on the serious under-funding of natural history facilities in many museums. I suspect it will be of interest to many AES members too! Another initiative planned by BCG for 1987 is the 'Seal of Approval' campaign, which is a means of bringing to the public attention the museums which have significant biological collection, services and staff. We hope this will have a national impact and there will be leaflets, stickers and associated literature circulating in support of it.

Finally, I must draw members' attention to the work of the Natural History Collections Research Units. These are regionally-based panels of curators from museums and universities whose objectives are to list briefly, describe and index under simple, fairly general headings, the named collections (public and private) in their areas and to publish the results. Eventually, the records from all the regions will be collated to produce a national catalogue of collections. So, anyone wishing to check a specimen in, say, the J. P. Robson collections of macrolepidoptera can very quickly find out that it comprises 10,500 specimens, mainly from the north of England, covers the period 1920-1950 and is held at the Hancock Museum, Newcastle-upon-Tyne (Davis and Brewer 1986). The compilation of the regional catalogues is a long job and does, of course, demand co-operation between professional and amateur collectors and curators. However, the results are extremely valuable as the two published regional catalogues — Hancock and Pettitt 1981, from the North-west, and Davis and Brewer 1986 from the North-east, show.

These are all the steps being taken by curators to publicise and generally 'open up' their collection resources to a wider public. Further discussion on many of these points would, I think, be valuable and as editor of the Biology Curators' Group Newsletter, I would be pleased to air AES members' views to all natural history curators (not just those taking the *AES Bulletin*) through their own Newsletter.

I welcome your comments.

REFERENCES

- Boylan, P. J. (Ed) (1977) *Towards a Policy for the Leicestershire Museums, Art Galleries and Records Service*. Leicestershire County Council, Leicester.
- Hancock, E. G. and Morgan, P. J. (1980) *A Survey of Zoological and Botanical Material in Museums and Other Institutions in Great Britain*. Biology Curators' Group, Cardiff.

Museums Association (in press) *Biological Collections Survey of Great Britain: A Report by the Museums Association Working Party.*

Davis, P. and Brewer, C. (1986) *A Catalogue of Natural Science Collections in North-east England with Biographical Notes on the Collectors.* North of England Museum Service, Durham.

Hancock, E. G. and Pettitt, C. W. (1981) *Register of Natural Science Collections in North West England.* Manchester Museum, Manchester.

THE MARACA RAINFOREST PROJECT

by I. MacFadyen (6218)

On 4th December 1986, I attended a Press Conference at the Royal Geographical Society in Kensington, where the Maraca Rainforest Project (Brazil), was publicly launched. The project assembles 50 well qualified scientists, mostly British and Brazilian, to tackle five research programmes in a remote part of Brazil, Maraca Island in the Urarucuera River, in Northern Brazil. The Project's Patron is His Royal Highness The Prince of Wales.

The Project will be in the field throughout the next year, studying forest regeneration (to help revive abandoned rainforest), completing a survey of flora and fauna, studying soils and hydrology, land development, and medical entomology.

Dangers the teams are likely to face include snakes, tropical diseases, wild boar, colonies of bees and wasps, and rapids.

The entomological research will study the role of insects in transmitting diseases; this will be undertaken by Dr Derek Charlwood of the Liverpool School of Tropical Medicine, and his team.

ORCHID POLLINATORS — A REQUEST

This spring and summer I shall be conducting a series of experiments upon some of our native orchids: with the consent of the Nature Conservancy Council and the Sussex Trust for Nature Conservation I hasten to add! I would find it very useful to know of any records that fellow members may have made over the years as to which insects have been observed pollinating these orchids.

My request is for any records where there has been a sighting of the orange/yellow pollinia from a known orchid species which has been seen attached to an insect, subsequently also identified. Records from pinned specimens would also be useful where pollinia are still attached to the insect, even if the plant species from which it came is unknown. Of just as much interest, also, would be records of all insects which have been observed to visit particular orchids, whether they were then pollinated or not.

All information gratefully received by Andrew MacClellan, School of Biological Sciences, University of Sussex, Falmer, Brighton BN1 9QG.

THE PROFESSOR HERING MEMORIAL RESEARCH FUND

The British Entomological and Natural History Society announces that awards may be made from this Fund for the promotion of entomological research with particular emphasis on:

- (a) Leaf-miners
- (b) Diptera, particularly Tephritidae and Agromyzidae
- (c) Lepidoptera, particularly microlepidoptera
- (d) General entomology

in the above order of preference having regard to the suitability of candidates and the plan of work proposed.

Awards may be made to assist travelling and other expenses necessary to fieldwork, for the study of collections, for attendance at conferences, or, exceptionally, for the costs of publications of finished work. In total they are unlikely to exceed £300 in 1987/88.

Applicants should send a statement, if possible in sextuplicate, of their qualifications, of their plan of work, and of the precise objects or amount for which an award is sought, to Dr M. J. Scoble, Department of Entomology, British Museum (Natural History), Cromwell Road, London SW7 5BD, as soon as possible and not later than 30th September, 1987.

BUTTERFLY AND MOTH STAMP SUPPLIER

Although often depicted to a reduced size, the fact remains that many of the lepidoptera (and indeed other insects) depicted on stamps are often not illustrated elsewhere in books and the stamps therefore form a valuable addition to identification, although it must be admitted that some of the issues are highly fanciful. They are also (except for some of the older issues and high value ones!) much cheaper than many of the books on the subject. Members whose interests, therefore, extend to these as well as the real thing, will be interested to learn that the UK's largest stockist of them is located in Leeds. He also specialises in bird stamps; is prepared to send stamps on approval; attends to wants lists and also holds postal auctions of relevant philatelic material. Enquiries, which should include a largish sae, to Anthony Grainger, 42 Lee Lane East, Horsforth, Leeds LS18 5RE. (Telephone: 0532-583790.)

A CONSERVATION DILEMMA, OR, WHAT TO DO . . .

. . . when an endangered species endangers an endangered species.

On Round Island, which is one of the Mascarene group in the Indian Ocean, there is an endangered sub-species of a palm tree, *Dictyosperma album conjugatum*, which has been found to be being badly affected by a scale insect which in turn proved to be a new species, now described as *Asterolecanium dictyospermae*, and of course confined to the same island. What does one do? Spray the palm tree to protect it and exterminate a newly described species of insect? Clearly the insect cannot survive if the palm does not, and the regeneration of the palm has been badly affected by habitat changes. The answer would seem to be that one has to encourage, by cultivation if necessary, the propagation of the palm and at the same time deliberately kill off sufficient of the insects (for which the safest method would be by hand-picking of them) to reduce their numbers to a population level the existing palms could support without being in danger of being killed.

MOTORWAYS AND CROSS-MOVEMENT

Correction of errors.

We regret that two errors evaded our proof-reading in Roger Dennis's article in the November last issue, and a complete line of text was omitted and the word 'not' inserted where it should not have been.

The first occurred on page 240 half-way down the page. The omitted line was:—"of a colonial insect. In this respect, *A. cardamines* differs" which should be inserted between the words 'hallmark' and 'from' on line 22 from the top of the page.

The two sentences commencing at line 20 down from the top of the page should therefore read as follows:—

"The apparent fidelity of males to sections of the valley where they patrol back and forth and their observance of implicit boundaries provide some hallmarks of a colonial insect. In this respect, *A. cardamines* differs from pierids in the same area (*P. rapae*, *P. napi*, and *P. brassicae*) which simply pass through the valley."

The second error is five lines up from the bottom of the page where the word 'not' should be deleted. The sentence commencing from line seven up should therefore read:—

"Males patrol longer and are more intensively (backtracks and circuits) in areas where hostplants are abundant but do ultimately break off to patrol before returning."

THE FAUNA AND FLORA PRESERVATION SOCIETY

Founded in 1903 this is the longest-established wildlife conservation society in the world and it works in many different ways to help conserve both animals and plants in all parts of the world and is deserving of support from all who take an interest in any aspects of conservation. The following are a summary of its activities:—

- ★ Through its magazine, *Oryx*, other special publications, exhibitions and lectures, keeps people informed about worldwide conservation matters.
- ★ Has active representation on over a dozen national and international conservation bodies.
- ★ In the 1960s initiated the action on the world trade in endangered species and from 1973 has played a leading role in the meetings of the Convention on International Trade in Endangered Species (CITES) which is now adopted by over 86 Nations.
- ★ Works closely with HM Customs and Excise on the monitoring of international trade and matters relating to enforcement controls.
- ★ Helps to promote legislation concerning wildlife. Helped to set up the World Wildlife Fund which does so much to raise funds for the conservation of many rare species.
- ★ Pioneers conservation action for animals and plants regardless of their popularity or attractiveness including such as snakes, toads, newts, rhinos, gorillas, orchids.
- ★ The subscription is £15 per year, but for students and retired it is only £7. Applications for membership (or further details) should be made to FFPS c/o Zoological Society of London, Regents Park, London NW1 4RY.

MARRIS HOUSE NETS

This small business specialises in producing nets for all purposes and for all sorts of people. In particular they are happy to discuss and quote for the provision of special patterns to your own design and needs.

Their basic netting material is 28 gauge Terylene in either white or black. Terylene is not only much more resistant to deterioration by sunlight than some other fabrics, but results in less damage to delicate insect wings than coarser materials such as nylon. The mesh used is also small enough to prevent escape of even small species as many of the Mymaridae. Coarser mesh can of course be used should the customer desire.

Sleeves for containing larvae on bushes and branches are also made to customer's individual requirements. Ask, stating sizes required, and you will be given a quotation.

A particular speciality is the Malaise Trap which is exported throughout the world to collectors and research workers. Their current pattern incorporates many modifications to the original design which have been suggested by entomologists in the light of experience in their use. It is the ideal trap for taking very large catches, particularly of diptera and hymenoptera, without the need of any power source.

Run by a long-standing member of the Society, familiar with those who attend our Annual Exhibition, Marris House Nets may be contacted at 54 Richmond Park Avenue, Bournemouth BH8 9DR. (Telephone: (0202) 515238.)

A FURTHER NOTE ON THE PURPLE HAIRSTREAK (*QUERCUSIA QUERCUS* (LINN.))

by Dr Neville L. Birkett (8489)

I was interested to read the note by John D. Locke on the Purple hairstreak in the *Bulletin* (45: 248-9). It reminded me that long ago, July 1950, I found a pupa of this butterfly spun-up in a crevice of the bark of an ash by a roadside some four miles north of Kendal. This pupa duly produced a perfect female which is still in my collection. There were no oak trees anywhere near the site of this find and since that date I have been convinced that ash can be a food-plant of this butterfly.

As indicated in the references given by Mr Locke there have been frequent references in the past to the association of this butterfly with ash. Edward Newman (*Illustrated Natural History of the British Butterflies and Moths* (1870) page 107) quotes *Entom.* 2 (1864) and comments—“This seems to suggest the idea that the food of the caterpillar is not confined to oak, but I have no proof that this is the case.”

I should have, but did not, follow up my observations in the years after 1950, but remain convinced that ash is a definite food-plant of the Purple hairstreak.

THE COMMA BUTTERFLY NORTH OF YORK

by A. Grayson (8621)

I noted with interest an article about butterflies in *The Yorkshire Evening Post* in May last year and it mentioned the remarkable spread of the Comma butterfly (*Polygonia c-album*) across the country in recent years, it having been seen as far north as Doncaster. On Thursday October 11th 1986 I was walking in the country near Sutton Bank which is about 30 miles north of York (and so 70 miles north of Doncaster — Ed.) when I was surprised to observe a Comma feeding on a heather flower. Is it news that this butterfly is now well north of York?

BOOK REVIEWS

The natural history of butterflies by John Feltwell. A5, pp 160, coloured and black and white illustrations. Croom Helm 1986. Price (hardback) £12.96; (paperback) £7.95.

The spate of butterfly books continues and one wonders what else can be written on the subject. This new work consists of a series of essays on various aspects of butterflies, using European species as a basis.

After a brief look at the fossil record there is an interesting account of butterfly collectors in Europe. Chapter two deals with butterfly adult structures with observations on the use of scents by females to attract males, stating that males probably detect females up to several hundred metres away by scent. The frantic quartering of ground by males in search of females and the obvious finding by sight, with the female displaying, could indicate that this contention is doubtful and indicates that other factors are at work. Chapter three concerns life cycles but includes some erroneous statements e.g. *Argynnis paphia* is not unique among European butterflies in laying its eggs away from the foodplant — *C. euphrosyne*, *L. coridon*, *Erebia pluto* and *Parnassius apollo* are some species which also do this. *Apanteles glomeratus* is not a general parasitoid of our butterflies, other species of the genus replacing it in many species. Most gregarious larvae use a web only in the early instars and disperse later.

Chapter four considers foodplants and I disagree with the contention that butterflies and their foodplants *co-evolved*. As butterflies are relatively late in the field, their foodplants would almost certainly already have been present at their arrival; the very diversity of plants used by some species throughout their range indicates a choice of what is available. It is true that there is a tendency to use plants of the same order but there are too many exceptions for any case of co-evolution to be substantiated. The author states that *N. polychloros* is now fairly infrequent in Europe yet its larvae swarm on trees in the south of France in the spring. The statement that *A. glomeratus* may attack up to 99% of larvae does not accord with my own observations. Of the many hundreds of wild larvae I have bred, none has produced this parasitoid, the main offenders being tachinid flies or solitary braconids. In dealing with the *Mellicta/Melitaea* species and their use of Scrophulariaceae with plantains as a basic alternative, it is stated that these plants are of the same family. The latter are Plantaginaceae, although H. K. Airy Shaw suggested that the two families might have a common ancestry. Chapter five discusses coloration and Chapter six habitats, natural and man-made. This chapter is very good. Further chapters relate to the effect of sunshine, populations and territories, migration and conservation. There is a bibliography, which, sadly, omits any AES publications on the subject, and both a general index and one of scientific names.

However, the photographs are excellent and well-produced and despite my criticisms, members will find this an interesting book which will widen their view of our butterflies and their ways.

PWC

RSNC Guide to butterflies of the British Isles by J. A. Thomas. A5 pp 160, many coloured illustrations, maps and histograms. Newnes Country Life Books 1986. Price £4.95 (paperback).

There appears to be no end to the books devoted to the butterflies to be found in this country. One of the latest is a handy little volume produced by the Royal Society for Nature Conservancy.

The author of *Butterflies of the British Isles*, J. A. Thomas, describes each species in turn, giving details of adult identification, young stages, habitat, behaviour, distribution and status. Coloured photographs of the imago, drawings of the ovum, larva and pupa and a map showing the insect's range are also given.

The book ends with a list of suggested further reading and societies to join, in addition to a useful index.

Butterflies of the British Isles should make a welcome addition to the enthusiast's bookshelves. It is published by Country Life at the modest price of £4.95.

T. F. Knight

Butterflies and late loves by Margaret Fountaine, edited by W. F. Cater. Large 8vo, pp 141. W. Collins and Sons Limited, 1986. Price (hardback) £9.95.

Ever since I read *Love among the butterflies* also published by Collins, (Reviewed *Bulletin* 40: 67-69) I have wanted to know more about the fascinating life of Miss Fountaine. Now we have the sequel, covering her adventures from 1913 to her death in 1940. Although neither book has a lot to say about entomology, they cover the adventures, both entomological and amorous, of a Victorian Lady, born in 1862, who travelled in all the continents in pursuit of butterflies. She undertook hazardous journeys into mountains and jungles using her legs, a horse and later a car. Long boat journeys and latterly aircraft flights took her from the Antipodes to the Brazilian jungles, to Malaysia, Borneo, Europe and the West Indies. Having collected over a little of the terrain covered by Miss Fountaine, using modern transport and equipment, I can appreciate what hardship she endured in pursuit of her hobby.

For those who have not read the first book, the sequel devotes its first chapter to new readers and then continues the saga with excerpts from her diaries interspersed with Mr Cater's commentary. Her collection was

bequeathed to the Castle Museum at Norwich (the Fountaine-Neimy Collection) and her diaries were sealed in a box and deposited with the Museum, not to be opened until 1978, a hundred years from the date when Margaret started her diaries. We are indebted to Mr Cater, of the Museum, for his excellent presentation of a life of an outstanding field entomologist and a very courageous woman, lucky with the net but unlucky in love.

PWC

An Indexed List of British Butterflies and Moths: Scientific and English Names by J. D. Bradley and D. S. Fletcher. Published by Kedleston Press. 1986 A5 format pp. vi, 119. Paperback. Price £6.00

Lepidopterists who may wish to purchase this work as an updated edition of *A Recorder's Log Book or Label List of British Butterflies and Moths* (1979) also by J. D. Bradley and D. S. Fletcher, should realise that it differs in several important respects from the earlier work which is still available from Harley Books. This new book is unsuitable as a check list or as a label list and its larger format makes it too large to carry as a field pocket book. The log book was type-set whereas this list has been printed in two columns by photographic means from a type-printed master. On the positive side it does contain its own index and a list of abbreviations of authors' names. The type face used is unpleasing to the eye and both print density and squareness of lines vary in the review copy. The numerical arrangement and serial numbers closely follow the log book and any nomenclature changes from the earlier list are synonymised. In the introduction the authors state that, "species of uncertain British status including those based on unconfirmed records and adventives unlikely to recur are marked with an asterisk. Exotic butterflies and saturniid moths deemed to have escaped from captivity have not been included". Migrants and importations that are sporadically recurrent are included without qualification. Extinct British species are prefixed by a cross. It is in this department that this list is most in need of revision. Several very dubious exotic butterflies are still included, albeit prefixed by an asterisk, whereas regular and well documented but very rare migrants such as *Euchromis ocella* and *Antigastra catalaunalis* are also asterisked. Extinction is more problematical. Neither *Hecatera dysodea*, *Apamea pabulatricula*, *Emmelia trabealis*, *Spilis striata* nor *Phyllodesma ilicifolia* are prefixed by a cross (but see *Ent. Rec. J. Var.* 98: 138 (1986) re *P. ilicifolia*).

Nomenclature and concepts of taxonomic classification are most unstable entities and any check-list can only reflect ideas prevailing at one particular instant. With respect to recent proposed changes in nomenclature and classification such as have been accepted in the recent Danish catalogue, this work sits firmly on the fence. In most cases the

authors have not accepted recently proposed nomenclature changes but have retained the *status quo* with the proposed name relegated to synonymy with the epithet *nom. dub. (nomen dubium)*. The Phycitinae, however has been extensively revised with the advice of Prof. R. U. Roesler but other suggested taxonomic changes have not been incorporated. It is most unfortunate that there are an appreciable number of errors, the most important of which is the omission of species 1753 to 1765 near the beginning of the Geometridae. Species 1766 (*Plemyri rubiginata* D and S) is without number or generic name. Other mistakes which have come to notice are:- both *Phibalapteryx virgata* and *Orthonama vittata* are labelled "Oblique Striped", *Clostera anachoreta* and *C. curtula* are "Scarce Chocolate Tip", *Diloba caeruleocephala* is mislabelled "Figure of Eighty" and 1724, *spadicearia* is mis-spelt "*spadicaria*". These names, however, are correct in the index.

This list is muddled in its concept and shows all the signs of skimmed proof-reading. I would suggest that those Lepidopterists who require an up-to-date list of British Lepidoptera rely on the 1979 log-book, correcting and modifying where necessary and hope that an accurate and well-printed list is soon published.

P. J. Jewess

INSECT PARASITES: SOME COMMON HYMENOPTERA AND DIPTERA PARASITIC UPON OTHER INSECTS AND INVERTEBRATES

by David A. Edwards (8131)

"Great fleas have little fleas upon their backs to bite 'em,
And little fleas have lesser fleas and so *ad infinitum*."

(*Agustus de Morgan 1806-1871*)

Anyone who has tried to rear Lepidoptera from egg to imago, will be familiar with insect parasites. The demise of the Lepidoptera larva and the emergence, not of the expected moth or butterfly, but a small fly or ichneumon wasp commonly causes anger and even revulsion in the Lepidopterist, and the subsequent destruction of the offending parasite. This reaction, however understandable, results in the destruction of much material which is of real value, and fascinating to those who take an interest in parasitic insects. These often tiny insects are among some of the most useful to mankind, for they control the many pest species which damage crops, such as the cabbage white butterflies (*Pieris spp.*) which are commonly attacked by the parasitic wasp of the ichneumonid type (*Apanteles glomeratus* (L)). Even the tiny aphids are attacked by another group of the Ichneumon or Braconid wasps, which kill off large numbers

on the roses and other plants in our gardens. Indeed, as the entomologist C. P. Clausen remarked, without these insect parasites to maintain the equilibrium of insect populations at a sufficiently low level, plant and animal life on the planet Earth would be impossible in its present forms (Clausen 1940).

Approximately one-tenth of all animal species are insects which parasitise other insects and invertebrates, and, in a relatively few cases, vertebrates. In adopting this mode of life, such insects have been forced into a wide variety of stratagems to overcome the difficulties imposed by their specialised niches. Thus, for example, the Bee flies (Bombyliidae) undergo remarkable transformations in their larval and pupal stages. A continental species (*Anthrax trifasciata* Mg.), whose host is a species of Mason-Bee, lays its eggs near the nest of its host, whose grubs are sealed into their cells by a kind of mortar. The newly-hatched *Anthrax* larvae are tiny thread-like creatures, which wander in search of a tiny crack in the mortar. If they find one, they penetrate into the cell and metamorphose into a smooth, fat grub with a sucker-mouth, through which the parasite slowly drains its luckless host of its life-fluids.

The parasite larva pupates in two stages: first a normal puparium forms, within which the transformation from larva to fly takes place; but then arises the problem of escape from the cell, and another transformation takes place, as a second stage pupa with strong spines on its head develops. With this coronet of spines the pupa batters its way out of the sealed cell and the adult fly emerges into the outside world (Fabre 1927). This life cycle is fairly typical of our own Bombyliidae, such as the common *Bombylius major* (L.).

Such parasites, which are only parasitic in their immature stages, are known technically as protolean parasites. The adults generally feed on nectar, pollen or honeydew and are not parasites. Another term sometimes used for these insect parasites is 'parasitoid'. This is to distinguish them from 'true' parasites, which do not usually destroy their host. In their early stages these insect parasites do fit the description, but most do destroy their host prior to emergence, acting as predators rather than parasites. In this article I will only use the term parasite, to avoid confusion.

Most orders of the Class Insecta contain some parasitic species, even the Lepidoptera, as some members of the family Epipyropidae have larvae which parasitise Lantern-flies (Fulgoridae). There are also beetles which are parasites, such as the famous oil beetle (*Meloe proscarabaeus* L.) whose larvae parasitise solitary bees; another is the Carabid beetle, the Bombadier beetle (*Brachinus crepitans* (L.)), whose larvae are also parasitic upon other Carabid larvae in certain stages of their development. It is in the orders Diptera and Hymenoptera that the vast majority of insect parasites are found. These attack all stages of the host life-cycle:

egg, larva and pupa, as well as adults; most being specific to one or two stages. The majority also specialise in their hosts, parasitising a particular family or genus. A few are generalist and will attack different orders; while some will only parasitise a single species, such as the large Ichneumon wasp (*Amblyjoppa proteus* (Christ.)), a common parasite of the pupa of the Elephant hawk moth (*Deilephila elpenor* (L)).

Many amateur entomologists are no doubt put off by the difficulties involved in the identification of these insect parasites. However, as K. G. V. Smith (1984) states, in his AES leaflet on rearing Hymenoptera parasitica, the rearing of parasitic material is in itself a very rewarding pursuit. In the course of his study the amateur will acquire a fair knowledge of several orders of insects; and if care is taken in the preservation of the parasite and host, plus larval skins, or pupal cases etc, and accurate data recorded, then the results will have real scientific interest. Probably the most successful study will be to concentrate on the parasites of a single order or family of insects. It can also be combined with another interest, thus anyone rearing Lepidoptera from larvae or eggs will soon acquire a collection of parasitica! My own interest is in the parasites of Coleoptera, and it is one which arose out of my early interest in beetles. In rearing of possible host material, it cannot be stressed too much that care must be taken to ensure that the parasites have actually emerged from the eggs or larvae etc, under examination. It is possible for parasite type Hymenoptera to emerge from unseen pupa or larvae collected by accident on the food plant or in soil in the cage in which the intended host insects are being kept. Again aphids on the food plants may be parasitised, and mislead the collector when they appear in the cage with the insect host under study. To avoid such mistakes it is better to keep quite small numbers of the insects, from which it is hoped to rear parasites, in any one container. Pupae or eggs may be kept in small plastic boxes or tubes until the adults or larvae emerge.

Some Hymenoptera parasitica are among the smallest insects, and a family of the Chalcidoidea group — the Mymaridae or fairy flies, parasitise eggs of various insects. Some of these tiny Mymarid wasps are under 0.25mm long; and a species which attacks the eggs of Dytiscid water beetles, *Prestwichia aquatica*, is aquatic, swimming down to the eggs on plant stems, it enters the egg and mates inside. Up to sixty individuals have been reared from a single Dytiscid egg. Not only do these tiny parasites play a part in controlling the populations of their host, but it has been suggested, (Crowson 1981), that they could be a major factor favouring the migratory behaviour of certain species of Dytiscids.

Another, comparatively simple, way to study and collect parasitica, is to collect the many kinds of plant galls, which are often to be seen on Oak and a wide variety of other plants, even in the winter. If these galls are collected and kept in plastic bags or boxes or even glass jars, then not

only will the gall-causers emerge (themselves often small 'wasps' called Cynipids), but also other small insects, often bright green or yellow in colour. These are Chalcid wasps, and one group, the Torymidae, distinguished by their extremely long ovipositors, are common parasites of the oak apple or marble gall wasps. The bright pink or red gall, known as Robin's pin-cushion or bedeguar gall, to be found on the wild rose, will give a whole range of small insects, which include the gall-causer, a cynipid wasp (*Diplolepis rosae* (L)), also other 'lodger' wasps, known as inquilines, which do not harm the gall-causer but share its food, and parasites of the gall wasps themselves and also the inquilines. Thus a complex food chain community is found within the same gall, and it is one which could well form a study by itself, especially if numbers of the galls are collected from different localities.

As mentioned earlier, those most familiar of insect garden pests, the aphids, also have many parasites and these make a rewarding group to study, especially if you have a good microscope available. Look for aphids which appear to be dead, and often darker in colour (known as aphid mummies). These are the parasitised individuals, and if kept in small tubes for a few weeks will give rise to tiny parasitic wasps, often of the ichneumon type or Braconidae, known as Aphidiinae. If the emergent parasites are put into a container together with a twig infested by the same aphid species, the behaviour of both the parasite and host may be observed. Often the attacked aphid will kick to dislodge the parasite, other aphids secrete a wax which repels the parasites. The parasites locate their hosts in two stages: in the first place the parasites locate the food plant of the host species by the chemical 'scents' (pheromones) given off by the plant, then, by searching the leaves, the host insect itself is located, either by pheromones given off by the insects themselves, or in the case of aphids, by the sticky honeydew secretions of the insects. Many aphid species feed on more than one host plant at different times of the year; thus the bird cherry-oat aphid alternates between the woody cherry tree in autumn and winter, but in late spring or early summer it emigrates to the oat grass. This enables the aphid to exploit both the tree and the grass at their maximum growth periods and when they contain the highest nutritional content. From studies carried out on the parasites of such aphids (Stary 1966), it seems that the parasites which attack the aphid on the tree are not the same as those which attack the aphid on the alternative host plant. This is because of the parasites' first stage in locating the host, by locating the host plant; they therefore cannot follow their host to different plants.

The range and complexity of insect parasites and their life cycles is enormous, but by concentrating on just one group the amateur can soon develop an expertise both in the curation and the identification of the material collected. With regard to the identification of the host insect this should not prove difficult, especially in the case of the common

Lepidoptera. Most beetles can be identified using the keys in Joy (1932), or one of the keys published by the Royal Entomological Society in their handbooks. The identification of the parasites may prove more of a challenge, there are keys to many Ichneumonidae, and some to the many Chalcid species; there is also a key to the Tachinid flies in the R.E.S. handbooks. Also more general books may prove of use to the beginner, and a list of such volumes will be found at the end of this article.

A well preserved and recorded collection will have data labels recording place collected, name of collector, date when specimen collected plus emergence of parasite; another to give identification of specimen/parasite if known; plus any details of habitat of host etc, on a third label or reverse of first label. Such labels may be hand made from thin Oxford board, or may be ordered from specialist printers found in the *AES Bulletin* with the collector's name and other standard information printed on them. The specimen plus data labels, should be held together on a long entomological pin of the kind known as 'Continental'. Suitable containers for the collection must be proof against insect pests which will make a meal of your prized specimens; small gauze bags filled with naphthalene will help repel these unwanted guests. Good quality collecting boxes may be purchased from Entomological Suppliers, though adequate and cheap containers can be made from the plastic boxes containing ice cream for freezers, with polystyrene on the bottom to stick the pins in. For the breeding of the insect hosts etc, a wide variety of containers may be used: such as pill boxes or the clear plastic lunch boxes of various dimensions. Cylinders of clear plastic material, such as that known as Mylar, which is chemically safe for insects, may be used. The lids and bases made from tin lids etc, the lid with air holes covered with fine mesh gauze to prevent the tiny insects from escaping. In these one can keep branches of the host food plant, or even whole plants in pots.

A collection such as that described above which has been carefully recorded would certainly be of interest to the expert, and a visit to the local museum, or a letter to the relevant member of the AES advisory panel would no doubt elicit advice and help with the identification of the specimens. The expert will be much more eager to help if the collector has shown at least some attempt to make identification to at least family level of some of his specimens. In this task there are some excellent general works which will help the would-be collector in identifying his specimens. A must on everyone's list will be 'A Field Guide to the Insects of Britain and Northern Europe' by Michael Chinery, an excellent introduction to all the major orders of insects; for those interested in the Diptera, whether as hosts or parasites, there is the excellent 'Flies of the British Isles' by Colyer and Hammond, which covers all the families of British Flies and contains much information on the ecology of these insects, in addition to keys. In regard to general works on insect

parasites, the beginner should consult the early but classical work by Clausen (1940) 'Entomophagous Insects', and the more recent and most informative work, Askew (1971) 'Parasitic Insects'. The aforementioned AES leaflet on 'Rearing the Hymenoptera Parasitica' by K. G. V. Smith (1974) gives many invaluable tips on this most absorbing study. The well-known book by H. Oldroyd (1958) 'Collecting, Preserving and Studying Insects' is a mine of useful information and will well repay reading.

A closing but most important point in these times of serious threats to our countryside and its wildlife must be to remind all those who collect larvae or pupae or adult insects, including the parasites, that they should read and follow the JCCBI Code for Insect Collecting. Always remember to replace unwanted or excess material in the same location in which it was collected. It would be unforgivable to allow such living material to die or release haphazardly.

REFERENCES

- Askew, R. R. (1971) *Parasitic Insects*, Heinemann, London 316pp.
 Chinery, M. (1972) *A Field Guide to the Insects of Great Britain and Northern Europe*. Collins, London. 352pp.
 Clausen, C. P. (1940) *Entomophagous Insects*. McGraw-Hill, New York. 688pp.
 Colyer and Hammond (1951) *Flies of the British Isles*. F. Warne & Co. 384pp.
 Crowson, R. A. (1981) *The Biology of Beetles*. Academic Press.
 Cooper, B. A. (1945) *Hymenopterists' Handbook*. AES. Vol. 7. 160pp.
 Dixon, A. F. G. (1973) *Biology of Aphids*. Edward Arnold, London. 58pp.
 Emden, F. I. van (1969) *Diptera: Cyclorrhapha (Tachinidae, Calliphoridae) Handbooks for the Identification of British Insects*. Vol. IX, Pt. 4, R.E.S. London. 132pp.
 Fabre, H. (1927) *The Life of the Fly*. Hodder & Stoughton, London.
 Joy, N. H. (1976) *A Practical Handbook of British Beetles*. 2 vols, E. W. Classey Ltd, Reprint. 816pp.
 Oldroyd, H. (1958) *Collecting, Preserving and Studying Insects*. Hutchinson.
 Richards, O. W. (1956) *Introduction and Keys to the Families. Hymenoptera. Handbooks for the Identification of British Insects*. Vol. VI, Pt. 1, R.E.S. London.
 Smith, K. G. V. (1974) *Rearing the Hymenoptera Parasitica*. AES Leaflet No. 35.
 Stary, P. (1966) *Aphid Parasites of Czechoslovakia*. The Hague: Junk. 242pp.
 Stubbs, A. and Chandler, P. (1978) *A Dipterist's Handbook*. AES, Vol. 15.

INSECTS IN CYPRUS, MAY/JUNE 1985

by Paul D. Brock (4792)

I visited the Greek part of Cyprus between 27th May and 10th June, 1985 with my mother and sister. A four-and-a-half-hour flight brought us to Larnaca Airport, with a one hour drive to Limassol, where we stayed in a cottage just outside the town.

The Greek part of the island is becoming more popular with tourists again, after the Turkish invasion of July 1974 which resulted in the division of the island. The butterflies have been fairly well researched,

and Parker (1983) has published a very useful guide, giving information and localities on 50 species. He also comments on several other species mentioned in old literature, and classified these as doubtful, being unable to verify those particular records.

Little is recorded on the other insects, and I would have liked more time to research these. The sample I noticed were very interesting. As a specialist on the Phasmida, I was keen to try and locate the only species recorded on the island.

The island is varied in habitat, from coastal regions which are largely arid garrigue; the very hot plains, and the quite spectacular mountainous areas. The scenery alone makes a visit worthwhile, and during our stay the temperature averaged the mid 80s°F (although it reached 97°F on a day out to Nicosia on 3rd June). The climate is a very dry one throughout most of the year, and every day was sunny, confirming Cyprus' reputation of having approximately 340 sunny days each year.

Driving in Cyprus is very straightforward, and I hired a car for ten days, visiting a number of suitable insect localities.

BUTTERFLIES

Thirty-two species were noted, details of which are provided in the table. Parker's account provides useful notes on individual species, and I have decided to simply write brief notes on the main general localities visited, mentioning species of particular interest.

Pano Lefkara. I collected near the roadside, one or two miles before reaching the village of Pano Lefkara, well-known for its lace. (The locals could be quite a nuisance stopping to attempt to persuade one to buy lace at their houses in the village!) A very hilly area, the grassy edges around agricultural plots were fairly productive, particularly for Satyrids. The locals suggested other collecting spots nearby, but I did not have the time to visit these.

Governor's Beach. A minute's drive from the fast main Limassol-Nicosia road, I stopped by the roadside near low-level agricultural land and searched for insects. Here, *Papilio machaon giganteus* Verity larvae were found on fennel on 31st May, bordering agricultural land, and one could watch the occasional female visiting the site to oviposit. The area was later to prove productive of other insects.

Paphos. Grassland near the Fort provided an interesting hour's search on 30th May.

Troodos and Platres. The highest point of the island is the summit of Mt. Olympus, Troodos (6401ft.). I saw little on the wing around Troodos, but at Platres (3700ft.) and lower down, around 3000ft., I saw many interesting butterflies in reasonable numbers. The 6th June in particular was most memorable in providing glimpses of *Limenitis*

reducta Staudinger by the shops in Platres, and a very large female *Pandoriana pandora* Denis and Schiffermuller basking in the sunshine. A number of butterflies congregated on valerian flowers by a low wall near the village of Platres.

Some of the butterflies were found amongst the rocks, or resting beneath the numerous pine trees. A beautiful fresh *Pseudochazara anthelea acamanthis* Rebel was found on rocks, very well camouflaged at rest.

Lania area, much lower down the mountains provided useful localities, and the chance to see several *Glaucopsyche paphos* Chapman, an endemic species flying around the prickly broom *Genista sphacelata* on rocky grasslands close to the roadside.

Akrotiri. I collected near the roadsides not far from the well-known salt-lake, before reaching the British Airport base. This low-level maquis proved interesting for butterflies and other insects, although they were not present in large numbers. I was pleased to see good colonies of *Thersamonia thersamon* Esper flying low around clover and prickly-leaved flowers, feeding and pairing.

Many other localities were visited, including river beds largely dried up during the summer, with their presence often revealed by Oleander bushes.

The best time to collect was early morning, but even during the hotter part of the day when little was on the wing, it would be possible to disturb *Maniola cypricola* Graves and others from their resting places under shady trees and bushes. Near Erimi on the 5th June I found a number of *Chazara briseis larnacana* Oberthür hidden in rock crevices, including both forms of the female (the white markings are replaced by orange/brown markings in f. *pirata* Esper).

OTHER INSECTS

STICK INSECTS. The only recorded Phasmid in Cyprus is *Bacillus cyprius* Uvarov. Three adults were found on 7th June at a previously unrecorded locality — Governor's Beach. They were on Lentisc *Piscacia lentiscus* L. This find will be the subject of a separate detailed article. I am not certain at this stage that the species is distinct from *Bacillus atticus* Brunner, which has been recorded from parts of mainland Greece, Italy and Yugoslavia.

PRAYING MANTIDS. *Empusa* species are probably the most spectacular European Mantids. I found an adult female *Empusa fasciata* near Lania on 6th June, and my mother located another adult female at Governor's Beach, next to a Phasmid.

These fed well in hang-up netting cages kept in the cottage. On the morning of departure I eventually found a first instar Mantis nymph in our cottage garden at Limassol. This insect has only one moult to make at the time of writing (December 1985), and is clearly a *Sphodromantis viridis* female. I had previously found hatched egg-cases of at least two species in the garden, and at Akrotiri found much smaller hatched egg-cases.

GRASSHOPPERS. Large 'stick'-like grasshoppers *Eximia cypria* Dirsch were found at Governor's Beach, and near Larnaca. These were remarkably well camouflaged on bare soil and cut crops.

Another large species *Anacridium aegyptium* L. was found in the cottage garden, and at Akrotiri. Other smaller species, including some with blue or red wings, were found in numbers at suitable localities eg Akrotiri.

ANT-LIONS. A female of the very large, attractive *Palpares libelluloides* L. was found at Akrotiri on 2nd June. *Pignatellus irroratus* was common, along with other species.

BEETLES. Several interesting species were seen, including:—

Oryctes nasiocornis L. var. *gryphus*. Limassol.

Julodia oriopordi, F. Paphos, Limassol etc.

Erodius fabricii Sch. Beach — Limassol.

Protaetia libanii G. & P. Very common on thistles — almost everywhere.

Protaetia cuprea F. Ditto.

A very attractive Tiger Beetle male was collected at Akrotiri.

MOTHS

Macroglossum stellatarum L. Larvae on bedstraw and adults near Erimi 5th June.

Scopula luridata Zell. Very common small white garden — frequenting Geometrid — Limassol etc.

Tarache malegassica Mac. Akrotiri.

Acontia luctuosa Schiff. Limassol etc.

Dysgonia algira L. Limassol 9th June.

Noctua janthina D. & S. Limassol.

Other as yet un-identified species were also noted, but I was too early for the larger hawkmoths.

During the holiday I visited the small Natural History Museum near Limassol Zoo. The insects represented were rather faded specimens, often poorly set, but with data.

BUTTERFLIES

V = very common/abundant

C = common

O = occasional/fairly common

Species

BUTTERFLIES																						
V = very common/abundant																						
C = common																						
O = occasional/fairly common																						
Species	Limassol Zoo/Public gardens 28/5	Pano Lefkara 29/5 and 7/6	Paphos, Nr fort 30/5	51km from Larnaca on Limassol road	Nr Governor's Beach 31/5 and 7/6	Amathus 31/5	Platres 1/6	Nr Platres at 1000m 1/6	Troodos 1/6	Nr Lania 1/6	Akrotiri 2/6	Nr Kolossi Castle 2/6	Nr Nicosia 3/6	Limassol 3/6	Akrotiri 4/5 and 5/6	Curium 5/6	Nr Souni 5/6	Nr Episkopi 5/6	Nr Erimi 5/6	Platres 6/6	Nr Lania 6/6	STATUS
Swallowtail		X	X	X	X						X	X	X		X							C
Large cabbage white		X						X								X				X		O
Small white	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		V
Bath white	X												X					X				O
Clouded yellow			X					X		X	X		X		X			X		X		O
Cleopatra		X	X				X	X								X				X		O
Southern white admiral																				X		1or2
Red admiral														X								2
Painted lady	X						X				X				X					X		C/O
Cardinal																				X		1
Syrian grayling																	X					O
Cyprus grayling								X	X	X										X		C
The hermit		X											X			X			X	X	X	C
White-banded grayling								X														1
Cyprus meadow brown		X		X		X		X						X			X		X	X	X	C
Oriental meadow brown		X																				O
Speckled wood	X								X					X	X					X		O
Wall brown															X				X	X		O
Large wall brown		X																				Few
Lattice brown		X																				Few
Small copper						X						X				X						O
Lesser fiery copper						X					X				X							C
Long-tailed blue							X	X		X												O
Holly blue								X														1
Paphos blue		X								X										X		X C/O
Grass jewel																					X	1
Brown argus										X												O
Common blue			X	X	X	X	X			X	X	X	X	X	X			X	X	X	X	V
Mallow skipper			X		X	X					X	X	X		X			X		X		C
Lulworth skipper		X	X	X	X	X	X				X	X			X			X	X	X		C
Pygmy skipper										X												1
Millet skipper				ONE LARVA ON CEREAL CROP AMATHUS 4/6																		

I had previously made contact with the Department of Agriculture and Natural Resources, Nicosia, which houses the Cypriot insect collection. The specimens are kept in store-boxes and are named, with data. The Hymenoptera and less popular Orders are well represented.

ACKNOWLEDGEMENTS. My thanks to Mr Rob Parker who very kindly provided me with information on localities, and showed me his interesting collection.

In Cyprus, the Department of Agriculture were very helpful, and my thanks to Dr John Ph. Zyngas, Ioannis Melifronoides and their colleagues for a fascinating visit to the Department, and a trip to a collecting spot near Nicosia.

REFERENCES

- Bretherton, R. F. (1974) "Butterflies in Cyprus, June 1973". *Entomologist's Rec. J. Var.* 86: 1-5.
Parker R. (1983) "The Butterflies of Cyprus". *Entomologists' Gaz.* 34: 17-53.
Tennant W. J. (1985) "Some records of spring butterflies in Cyprus in 1984". *Entomologists' Gaz.* 36: 105-109.

SOME STAFFORDSHIRE DRAGONFLY RECORDS

by Jan Koryszko (6089)

1. The black darter. *Sympetrum danae*

This species is regarded as uncommon in the county, but has been recorded over several years at Parkhill County Park. During both 1984 and 1985 I observed single examples flying over heather at Barlaston Rough Close Common.

2. The broad-bodied chaser. *Libellula depressa*.

Recorded from Gnosall and Meaford where specimens were photographed by Tony Mellor in 1985 and 1986. There was a possible sighting by myself in 1986 at Barlaston Rough Close Common.

3. The white-faced darter. *Leucorrhinia dubia*

This species was photographed on two occasions by Tony Mellor when we and others were collecting and recording on Whixall Moss.

4. The migrant hawk. *Aeshna mixta*

This species is known to be spreading north and the first Staffordshire record was photographed by Alan Moffet in the south-west of the county. It is well worth looking out for elsewhere.

“MOTHBALLS” AND OTHER INSECTICIDES USED IN INSECT COLLECTIONS

by Dr Gerald Legg

Insect and other collections can form an ideal meal for many pests — consequently those people who have collections must provide a means of protecting the specimens from attack. One of the most widely used techniques is to keep an insecticide or repellent within the drawer/box containing the specimens. It is perhaps worthwhile to point out here that prevention is better than cure. If *good quality* drawers are used in the first place to store the collection, then pests will not normally be able to get in.

Insecticides by their very nature are *poisonous* and will affect other forms of life besides those you primarily want them to, including man. Over recent years, interest has been taken in the possible effects of chemicals used in the conservation of insect and other collections, particularly in museums. Many museums have insect collections and as a result, use large quantities of various substances to deter and prevent pest attack. Working in an environment saturated to a greater or lesser extent with insecticidal fumes has been shown to be potentially harmful.

One chemical that had been in common use in museums was *para-dichlorobenzene*. This has now fallen into disfavour because of its alleged harmful properties. These properties can be divided into short- and long-term effects. The short-term effects depend upon the sensitivity of the person concerned and how long and to what degree they are exposed, and include: nausea, lacrymation, breathing difficulties, skin irritation and headache. On returning to fresh air the symptoms usually disappear quickly. Long-term, prolonged exposure has been linked with liver damage in humans.

Before deciding one way or the other whether or not to use PDB, consideration should be given to the above, and also to the airtightness of the storage units in use. If the units are not of a very good quality, an insecticide of some sort will be needed. However, this will also mean that, if pests can get in, then insecticidal fumes can get out. Where will the collection be kept? In the bedroom, where you will breathe in the fumes all night?; in the sitting room or attic? Remember, prolonged contact is the real problem. Care must also be exercised when examining the collection. Avoid breathing great gulps of fume-laden air. Going to a cabinet, opening it up, removing a drawer and opening it to immediately examine a specimen will mean that you will receive a short sharp concentrated dose of insecticide. It is better to open the cabinet, let it “air” for half a minute, and remove the drawer, then carefully open it, keeping clear and holding your breath, and then let it “air” to disperse the insecticidal vapour, before examining the specimens at close quarters.

If you *are* going to use PDB, then handle the substance carefully. The innocent and mildly pleasant-smelling crystals are *toxic* and dangerous by skin absorption. Use a spoon or similar article to ladle the crystals into the drawers. Do not leave the tin open all the time while you are putting insecticide in a cabinet, or spill the crystals everywhere; and don't get so close that you breathe in excessive amounts of the vapour.

PDB is very effective against most pests, but, remember, it is a poison, so take care and respect it.

Naphthalene is another chemical used to *deter* pests. This is not an insecticide, but a repellent, and not a very good one at that. Many museums rely heavily on this nowadays, since they no longer use PDB, but in fact, doubt has been cast upon its effectiveness. If you use Naphthalene, then follow the instructions as given above for PDB.

One of the most effective agents now coming into regular use by many museums is *dichlorovos*, not only to protect insect collections, but birds, mammals, and ethnography as well. Dichlorovos is popularly available impregnated in a plastic strip and used as a slow-release insecticide for flying insects. It is sold under the trade names of "Vapona" and "Mafu", and can be obtained from most leading chemists and hardware shops. Small cubes of this can be cut from the strip (4 x 4 x 4mm). A single cube can be pinned through its edge into the insect drawer or box. It will very effectively kill any pests present (if they are hiding within the bodies of your specimens, they will suddenly appear when the vapour gets to them and walk around the container; this can be quite dramatic). The presence of the insecticidal vapour will also kill any pests trying to get in. The life of this insecticide, as with any other, is dependent on how well-fitting the lid of the drawer is, and how often it is opened. It is easy to see when PDB or Naphthalene has evaporated but with the dichlorovos there is no indication when it has disappeared. A good quality drawer left untouched for three years can still contain an active cube of dichlorovos. However, it is probably best to change the cube annually. Although dichlorovos is very effective against flying insects, it takes longer to affect beetles, particularly their larvae.

However, they are eventually killed. The different species of *Anthrenus* which cause much of the damage to insect collections, are all affected to different degrees by this and other chemicals. As far as it is known, this substance is *relatively* safe to use, but do not be misled here, because it is dangerous. After all, it kills insects and so must be treated with respect.

Follow the code of practice outlined for PDB when treating or examining the collection. In its slow release form you are less likely to receive a concentrated dose whilst handling it, but you will when opening a drawer or box. Do *not* touch the material without wearing plastic or thin rubber gloves (surgical gloves are ideal particularly when cutting it up). It is not easy to cut, being rubbery, so take care here also. Cut it up in a well-

ventilated area. Forceps can be used to handle the cubes once you have prepared them to put in the drawers. There is an alternative to the rubber impregnated "Vapona" and "Mafu" which is more potent and easily used. It is a rodenticide strip available from Rodent Control Ltd, 70-78 Queens Road, Reading, Bucks RG1 4BZ.

Dichlorovos, unlike PDB, is used by many museums, including the British Museum (Natural History) and the Booth Museum, Brighton.

There are other recipes still used to control pests, many of which are potentially very hazardous and consequently do not warrant use nowadays and will not be included here.

Details of the toxicology of the three chemicals mentioned above are given below (from Sax 1975, Clydesdale 1982).

PARA-DICHLOROBENZENE (mothballs, 1, 4-dichlorobenzene, PDB). Highly flammable. Moderately toxic if inhaled, causing nausea, headache, loss of concentration, anaemia; prolonged exposure may cause liver damage. Irritating to skin and mucous membranes; highly toxic if swallowed.

NAPHTHALENE ("Mothflakes", white tar, tar camphor). Moderate fire hazard. Moderately toxic but less so than PDB; may involve both reversible and irreversible changes not severe enough to cause death or permanent injury, including nausea, headache, diaphoresis, hematuria, fever, anaemia, liver damage, convulsions and coma.

DICHLOROVOS (Dichlorvos, Vapona, Mafu, Nogos, Nuvan, Dede vap, DDVP).

In its pure state: highly toxic: threshold limit value (maximum average concentration in the air for a 40-hour week) 0.1ppm; short-term exposure level (maximum concentration in the air for a 15-minute exposure) 0.3ppm. This chemical is cumulative and is a suspect mutagenic agent and foetotoxin. Mild exposure causes weakness, headaches, abdominal cramps, anorexia, blurred vision. These symptoms are reversible.

REFERENCES

- Sax, N. I. (1975) *Dangerous properties of industrial materials*. 4th ed. published by Litton Educational Publications.
Clydesdale, A. (1982) *Chemicals in Conservation: A guide to possible hazards and safe use*. Conservation Bureau, Scottish Development Agency.

Standard reference works for the entomologist



Just complete:

The Spiders of Great Britain and Ireland

written and illustrated by Michael J. Roberts

Two volumes of text and structural line-drawings describing and illustrating all 617 species of spiders found in Britain and one volume of superb colour plates depicting 311 species of distinctly different appearance, considerably magnified.

'... no further books directed towards the identification of British spiders will be required for many years to come.' A. F. Millidge

Clothbound

Volumes 1-3

ISBN 0 946589 18 6 £135.00 net

in progress:

The Moths and Butterflies of Great Britain and Ireland Volumes 1-11

edited by John Heath and A. Maitland Emmet

'An absolute must for all those seriously interested in lepidoptera and, for the quality of production and with coloured plates, very good value indeed.' Brian Gardiner, *Bulletin of the Amateur Entomologists' Society*

Vols 1, 2, 9 and 10 available in both cloth and paper covers

Volume 7 (Hesperiidae to Thyatiridae) due Summer 1987

This volume covers all the butterflies and some families of larger moths. The two introductory chapters deal with Classification and Re-introduction and the 24 colour plates are by Richard Lewington.

Clothbound

Vol. 7 ISBN 0 946589 09 7 approx. £47.50 net

also available:

British Pyralid Moths – a Guide to their Identification

by Barry Goater; illustrated by Geoffrey Senior and Robert Dyke

'It is hard to imagine a better work on this particular group of Lepidoptera.' John Bebbington, *Field Studies*

Clothbound

ISBN 0 946589 08 9 £19.95 net

Breeding Butterflies and Moths – a practical Handbook for British and European Species

by Ekkehard Friedrich (translated by Steven Whitebread and
edited by A. Maitland Emmet)

'THE working and reference book for all lepidopterists who wish to breed continental butterflies and British and European moths.' P. W. Cribb, *Bulletin of the AES*

Clothbound

ISBN 0 946589 20 8 £20.00 net

Paperback

0 946589 11 9 £9.95 net

The Dragonflies of Great Britain and Ireland

written and illustrated by the late C. O. Hammond, FRES

Second edition, revised by Robert Merritt (1983)

Generally recognized as the best identification guide to British dragonflies and damselflies, all of which are illustrated in colour.

Clothbound

ISBN 0 946589 00 3 £19.95 net

Paperback

0 946589 14 3 £9.95 net

Colour prospectuses and complete catalogue detailing current and future titles on the British and European fauna will be sent on request.

* Please add £1.50 each for titles £20.00 and under and £2.00 each for titles over £20.00 to cover postage & packing, if ordering direct from the publisher.

Access and Visa cards accepted.

Harley Books,

Martins, Great Horkesley, Colchester, Essex CO6 4AH

Tel: (0206) 271216

NATURE OF THE WORLD

Suppliers to Collectors, Schools and Colleges of
**TROPICAL & BRITISH BUTTERFLIES
AND ENTOMOLOGICAL EQUIPMENT**

In addition to our usual range of setting boards, Pins, Plastic boxes, Forceps etc, we have recently added **STORE BOXES** and the much acclaimed **SELF ASSEMBLY BREEDING CAGES** to our list.

**FOR COMPREHENSIVE ENTOMOLOGICAL SPECIMENS &
EQUIPMENT LISTS SEND 50p.**

SPRING BANK, BIRCHES LANE, NEWENT, GLOUCESTER.

Butterfly Farm

(CHRISTCHURCH)

14 Grove Road East
Christchurch, Dorset
BH23 2DQ

Tel:(0202) 471336

*Suppliers of livestock and breeding
cages to schools and entomologists.*

Wholesale suppliers of

Butterfly Farm Shop requisites.

*Butterfly framing service to
the trade and collector. S.a.e. for
livestock and cage details.*

**Please note that we are
not open to the Public.**

Secondhand & antiquarian

BOOKS

**Butterflies, moths and
other entomology.**

**BOUGHT AND SOLD
Frequent catalogues issued**

DAVID DUNBAR

31 Llanvanor Road, London NW2
Telephone 01-455 9612

*Collections and single items
of value purchased.*

ENTOMOLOGY

**BOOKS & PRINTS
BOUGHT & SOLD**

●
*Mail Order specialists in rare
and secondhand books.
New books also supplied.*

●
Search service for O/P titles.

●
CATALOGUE FREE ON REQUEST

JOHN TROTTER

11 Laurel Way, London N20
Telephone 01-445 4293

BOB HENDRA

JL. STASIUN DALAM 3G
MEDAN — SUMATRA
INDONESIA

Specialists in
**INDONESIAN LEPIDOPTERA
and COLEOPTERA**

Price Lists on Request

MIDDLETON INSURANCE SERVICES

Contact us for all your insurance requirements, including:—

Household insurance, incorporating:

Cover for Cabinets and Drawers

Collections at Home or whilst on Exhibition (including transit)

Apparatus kept in the Home

Equipment used in the Field

Travel insurance for Holiday, Business or Collecting

Trips in the UK or Abroad

Competitive Motor Insurance Premiums for Cars, Motor Cycles,
Mopeds, Vans, Three-wheelers etc.

Full Commercial and Business Insurance Protection

Complete Life Assurance Service, including Savings Plans, Unit

Linked and Endowment, Individual and Company Pensions,

Mortgages and Re-mortgages.

Write or Telephone **David Keen** or **John Turner** for free,
no obligation, advice and quotations.

**ORCHARD HOUSE, 53-56 PARSONS STREET, BANBURY, OXON,
OX16 8NB
TELEPHONE (0295) 66655**

NATURALISTS RANCH/LODGE — COSTA RICA

Fully-inclusive programs for Butterfly/moth/beetle collectors,
available year-round. Special airfares.
Enclose 31p stamp for brochure.

NEW 12-PAGE SUMMER 1987 CATALOGUE

Thousands of butterflies and moths from around the world
including many species unavailable elsewhere! Enclose 31p
stamp for your copy or send £2 for Mailing-list membership.
Catalogues/newsletters issued monthly.

NEW BOOK- Butterflies of Costa Rica & Their Natural History

Just published! 560 species in colour, life histories,
390 pages. £22.95 incl. postage in UK. Send UK cheque, PO
or Access.

**transworld
butterfly company**
compañía transmundo de mariposa



Apartado 7911
100 San Jose
Costa Rica
Central America

RONALD N. BAXTER

Entomologists

45 Chudleigh Crescent
Ilford, Essex IG3 9AT
Telephone: 01-590 3285

Breeders of British and Exotic
Lepidoptera, Stick and
Leaf Insects, etc.

Papered Exotic Lepidoptera,
Coleoptera and miscellaneous
insects.

Lists issued twice yearly.
Yearly subscription 50p
£1.00 overseas.

*In your replies please mention
the AES.*

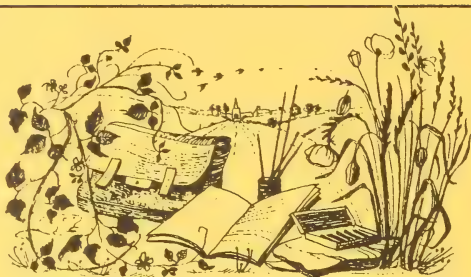
**Member of the Entomological
Suppliers Association.**

E. W. Classey Ltd.

**P.O. Box 93
Faringdon, Oxon.
SN7 7DR
England**

Books by post, New and
Second-hand

Catalogues on request



Field Studies Council

COURSES FOR ALL

Nine superbly situated Centres in England and Wales offer opportunities to study all aspects of our environment on over 430 different residential courses — many of special interest to entomologists — from around £53 for a week-end. Find out more by writing or sending this coupon to the Field Studies Council (AEF), Montford Bridge, Shrewsbury SY4 1HW enclosing a first-class stamp.

Please send me details of courses in England and Wales:

Name (Mr/Mrs/Ms)

Address



ANNUAL EXHIBITION

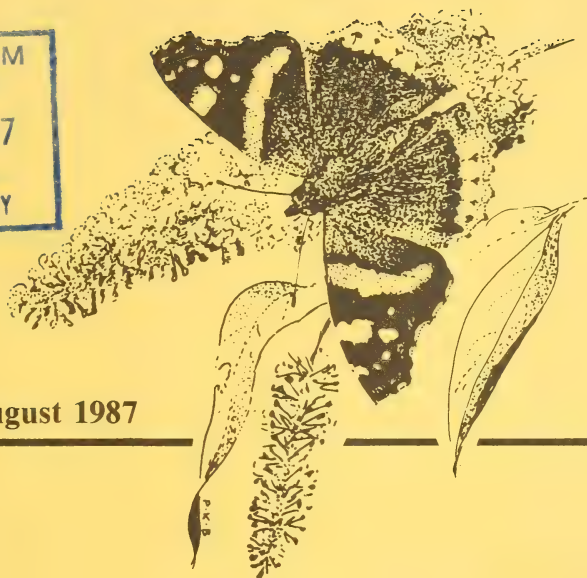
**The AES Annual Exhibition will be held at the
Civic Centre, Lampton Road, Hounslow, Middlesex
on Saturday, 10th October, 1987, 11 am to 4 pm.**

This is the same venue as last year and it is hoped that this advance notice will enable Members to plan projects and exhibits for the Exhibition.

Maps and full details will appear in the
August, 1986 AES Bulletin.

Please make enquiries to: R. F. McCormick,
125 Brocks Drive, North Cheam, Sutton, Surrey.

S.36A



Volume 46, No. 356, August 1987

The Bulletin of the Amateur Entomologists' Society

EDITOR
BRIAN O.C. GARDINER, F.L.S.

The Amateur Entomologists' Society

Founded in 1935

President:	E. LEWIS	11 Court Farm Road Warlingham, Surrey.
Hon. General Secretary:	C. C. PENNEY	109 Waveney Drive, Springfield, Chelmsford, Essex CM1 5QA.
Hon. Treasurer:	R. A. FRY	4 Marennas Crescent, Brightlingsea, Colchester, Essex CO7 0RX.
Registrar:	NANCY CRIBB (Mrs)	355 Hounslow Road, Hanworth, Feltham, Middx TW13 5JH.
Hon. Bulletin Editor:	B. O. C. GARDINER	18 Chesterton Hall Crescent, Cambridge CB4 1AP.
Hon. General Editor:	P. W. CRIBB	355 Hounslow Road, Hanworth, Feltham, Middx TW13 5JH.

WHERE TO WRITE

First subscription (including entrance fee) £5, or £4 under 18, changes of address, non-arrival of Bulletins, membership applications and records.

REGISTRAR (Mrs Cribb)
Address as listed above.

Subscription renewals
£4 or £3 (under 18):

NANCY CRIBB (Mrs), 355 Hounslow Rd,
Hanworth, Feltham, Middlesex TW13 5JH.

Manuscripts, drawings and books for review:

B. O. C. GARDINER
Address as listed above.

Advertisers:

R. DYKE, 6 Grange Park Avenue,
Grange Park, London N21 2LJ.

Exhibition matters:

R. F. McCORMICK
125 Brocks Drive, North Cheam,
Sutton, Surrey.

General enquiries:

C. C. PENNEY
Address as listed above.

J.C.C.B.I. representative:

C. HART, Fourpenny Cottage,
Dungates Lane, Buckland,
Surrey RH3 7BD.

Conservation matters:

D. LONSDALE, Forest Res. Stn.
Alice Holt Lodge, Wrecclesham,
Farnham, Surrey GU10 4LH.

Wants and Exchange:

M. COLVIN
1 Sedgewick Close, Pound Hill,
Crawley, Sussex RH10 4BZ.

A.E.S. Exotic Insects Group:

C. J. ESCHBACHER, 38 Frith Road,
Bognor Regis, Sussex PO21 5LL.

**A.E.S. Insect Behaviour and
Ants Study Group:**

B. L. WILLIAMSON, 73 Little Brays,
Harlow, Essex CM18 6ES.



OPEN DAILY

Apr 1 to Oct 30

11-5 including
weekends

Worldwide Butterflies and Lullingstone Silk Farm

**LIVESTOCK SPECIMENS
ENTOMOLOGICAL EQUIPMENT**

Send SAE for CATALOGUES



See where unique
English silk is
produced for Royalty.

Compton House Sherborne Dorset

(on A30 Yeovil-Sherborne dual carriageway)

Tel: Yeovil 74608



**WET OR FINE
LOTS MORE TO SEE!**

E. W. Classey Ltd.

**P.O. Box 93
Faringdon, Oxon.
SN7 7DR
England**

Books by post, New and
Second-hand

Catalogues on request

AN INDEXED LIST OF BRITISH BUTTERFLIES & MOTHS

Scientific and English Names

By J. D. Bradley and D. S. Fletcher

Available from:

J. D. Bradley, 53 Osterley Road,
Isleworth, Middx TW7 4PW.

Price:

1 Copy — £6.00 incl. p. & p.

2 Copies — £9.00 incl. p. & p.

The Entomologist's Record

and Journal of Variation

A bimonthly illustrated magazine founded by J. W. Tutt in 1890, is devoted mainly to the Lepidoptera of the British Isles. It also deals with other orders of insects especially Coleoptera, Diptera, Hymenoptera, Orthoptera. Its articles include descriptions of new species and varieties, reports on collecting trips, distribution, habits and habitats of insects and of collecting and study techniques suitable for novice and expert. It circulates in 47 countries.

Annual United Kingdom subscription £15.00

Specimen copies are available from the Publicity Director,
4 Steep Close, Orpington, Kent BR6 6DS
price £1.20, postage included.



THE LONDON BUTTERFLY HOUSE

SYON PARK

THE WORLD'S LARGEST LIVE BUTTERFLY SAFARI

Tropical gardens under glass where whatever the weather you can stroll among FREE FLYING butterflies from all over the world. All stages of breeding. Courtship displays among exotic flowers, jungle foliage and water plants.

AN EXHIBITION

An educational collection. Live insects – giant spiders, leaf cutting ants, stick insects, praying mantis etc.

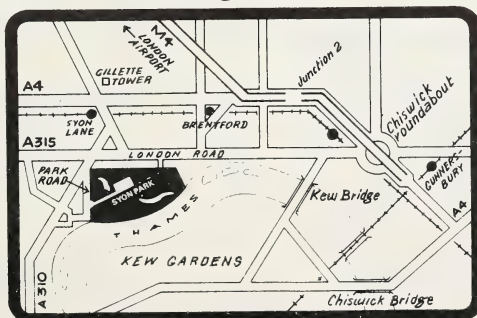
Browse around the Butterfly Shop

Gifts – all with a butterfly motif. Books and charts.
Equipment for the amateur entomologist.
Livestock for rearing at home and school.

A day out for all the family, a motor museum, the Garden Centre and Syon House itself.

How to get there

Open from 10am
to 5pm 7 days a
week throughout
the year



Special rates for
organised groups
and schools – ring
01-560 7272

FREE CAR PARK

NATURE OF THE WORLD

Suppliers to Collectors, Schools and Colleges of
TROPICAL & BRITISH BUTTERFLIES
AND ENTOMOLOGICAL EQUIPMENT

In addition to our usual range of setting boards, Pins, Plastic boxes, Forceps etc, we have recently added **STORE BOXES** and the much acclaimed **SELF ASSEMBLY BREEDING CAGES** to our list.

FOR COMPREHENSIVE ENTOMOLOGICAL SPECIMENS & EQUIPMENT LISTS SEND 50p.

SPRING BANK, BIRCHES LANE, NEWENT, GLOUCESTER.

Butterfly Farm

(CHRISTCHURCH)

14 Grove Road East
Christchurch, Dorset
BH23 2DQ

Tel: (0202) 471336

Suppliers of livestock and breeding cages to schools and entomologists.

*Wholesale suppliers of
Butterfly Farm Shop requisites.
Butterfly framing service to
the trade and collector. S.a.e. for
livestock and cage details.*

**Please note that we are
not open to the Public.**

Secondhand & antiquarian

BOOKS

**Butterflies, moths and
other entomology.**

BOUGHT AND SOLD
Frequent catalogues issued

DAVID DUNBAR

31 Llanvanor Road, London NW2
Telephone 01-455 9612

*Collections and single items
of value purchased.*

AES BULLETIN

No. 356



EDITORIAL

I have been both taken to task and praised for the same editorial in last August's issue (*Bulletin* vol. 45:123). In all fairness, therefore, I publish both my correspondents' "Letter to the Editor".

One of the medical successes of the last Great War was the avoidance of insect born diseases and this was almost entirely due to the success of DDT in controlling lice and fleas. The discovery of its efficacy and the doses required was in turn due to the succession of mainly students who were paid to breed the lice required for testing by having them strapped onto their legs. I have reared insects of every description for some 50 years and have always used myself as food when the occasion demanded it. I refer of course not just to lice but to all other species of the bloodsucking fraternity. In the light of present knowledge I would not do the same again without taking infinitely more care and precautions than I ever did in the past. The reason for this is the advent of AIDS. Although I have seen it stated that insects (which insects by the way? - this I have not seen specified) cannot transmit the dreaded virus, I have my doubts. Mosquitoes, for instance, are known to transmit a number of viral diseases and have been considered as a cost-effective weapon for biological warfare use. That this is so is directly contradictory to the brushing aside of their potential role in spreading AIDS.

It is a well-established fact that AIDS is spread by the multiple use of hypodermic needles and what is the proboscis of a bloodsucking insect but the needle of a hypodermic! Due to its long and uncertain incubation period there is no easy proof but I should really hate to be bitten by any flea, mosquito or Tabanid that had last fed on an AIDS sufferer. Indeed the virus has actually been stated to be able to survive for an hour or two in bedbugs.

A further food for thought, there is no known cure for Chaga's disease, which has been responsible for millions of deaths, and which, like AIDS, is a slow killer. It is transmitted only through the bite of Reduviid bugs and far more people are infected than have AIDS. Could it be that the apparent indifference to it until recently is due to the fact that it is a disease of the rural tropical poor and cannot spread in the affluent wealthier Nations? Indeed, it is only since the advent of AIDS that serious control measures, in the form of methodical spraying of insecticide to eliminate the vectors, has taken place.

OUR ANNUAL EXHIBITION AT HOUNSLOW OCTOBER 10

SPECIAL ANNOUNCEMENT CONCERNING THE ARRANGEMENTS

Members, Traders and Visitors are asked to take note that the arrangements for this year (which may be the last, as we are hoping to move to a more capacious venue), are rather different from previous years and the following new procedures will apply.

1. **THE ENTRANCE.** This will be by the *Front Doors* of the Civic Centre which are those made of glass and situated *beyond* the rather narrow entrance in the side of the building we have used in the past. Members and visitors will be checked in in the main foyer before proceeding up the main stairway. Areas not available to us will be screened off.
2. **CATERING.** Light snacks and drinks will be available this year *up until 3.00 pm only*, when the whole of the restaurant area has to be closed in order to enable it to be got ready for an evening booking by another organisation. A notice to this effect will be posted on the door. This area is on the ground floor and is accessed by the spiral staircase.
3. **THE BAR.** This, we are pleased to announce, will be open during normal licensing hours and is situated at the far end of the ground floor.
4. **EXHIBITS.** These, including the usual fine display by St Ivo School, will be on the ground floor and situated in the staff dining area outside the cafeteria.
5. **TRADERS.** These will all be on the first floor and be spread over the Exhibition Hall, the Antechamber and Committee Rooms 1, 2 and 3.
6. **OBSERVING THE LAW.** The politicians have now saddled us Entomologists with more than enough confusing legislation in respect to wild-life and while it may be quite legal for a Japanese, an American or a Russian to trade in *Apollo* butterflies or the Birdwings (whose export is actively promoted by the governments concerned) it is illegal for us in the EEC to do so. The legislation also lays down strict regulations as to how

certain groups of livestock should be handled, displayed or sold and indeed special licences must be obtained for certain categories, not just for the individual keeper, but for the premises where the animals are kept/displayed and/or sold. In order, therefore, to comply with the law, the Society has had to impose certain restrictions on some categories of trade and will do its best to see that species are not traded in at its Annual Exhibition or otherwise under its auspices contrary to the law. While we have had complaints and objections over these restrictions, they are in fact merely guidelines drawing attention to what is in fact the law of the land, which insofar as we, the AES, are able, intend to uphold at any events held and organised by us.

JOHN HEATH

Very sadly we have to report the death, on July 6, of John Heath, a member of some twenty years standing and best-known to all of us as the Editor of that magnum opus *The Moths and Butterflies of Great Britain and Ireland*. John had this work in hand since its inception in the mid 1970s and at the time of his death was just putting the finishing touches to the fifth of the volumes (vol. seven of the series) due for publication this year. It has been John's dedication to the task and his meticulous attention to detail, as well as his many contacts which enabled him to call on the expertise of Entomologists worldwide, that has made this work such an authoritative and excellent production. John will be greatly missed by those of us who have known him over many years.

LETTERS TO THE EDITOR

Dear Sir,

The ideas of the 'animal rights movement' are frequently obscured by ignorance and prejudice. Unfortunately your editorial (August 1986) about antipathy to collect and blood sports in general is actually inaccurate and does not clarify the issue.

You are probably right to claim a growing concern about hunting in all its forms. But, whilst you have given some consideration as to how this concern manifests itself, you appear to have given none as to why it has developed. One wonders whether you would even be aware of it in the absence of what you describe as 'violent and illegal' harassment. Such behaviour is inherent in blood sports and to imply it results from opposition to them in disingenuous.

There is considerable opposition to fishing and the 'glorious twelfth' although you appear to be unaware of it. This has been documented in animal rights literature and even sporadically reported in the National press.

Your views specifically about collecting are dismaying. Are you really claiming that the major pleasure of Entomology is the capture and killing of insects? This may be the case for some Entomologists but surely such behaviour is not to be encouraged. To advocate captive breeding and release simply to encourage such activity belittles Entomology. Even if the opposition you anticipate because of effects on distribution records and population genetics is ignored, such a policy would inevitably lead to an increase in those opposed to the idea of collecting.

'Anti-Collectors' are aware that, as quoted by David Lonsdale from the IUCN Red Data Book on Swallowtails, private collecting can be an instructive hobby and is important for research. However they are also aware that its continued encouragement, for the reasons you advocate, will lead to an inadequate search for alternatives, isolation of Entomology and an increasing number of people who find it repugnant.

Yours faithfully,

Dr. P. Griffiths (7324)

Dear Sir,

I should like to respond to the interesting editorial in last August's *Bulletin* regarding the breeding and release of lepidoptera.

I agree on this subject whole-heartedly. I have not been a member of the association for very long, around 12 months, but in this short time I have managed to release quite a few moths and a few butterflies back into the wild. They have only been the more common species but I feel the knowledge I have gained from rearing them from ova will be invaluable as I become more ambitious, and attempt to rear less common species and release them into suitable habitats.

I feel it should be encouraged by the AES to prompt its members into their own breeding programmes, especially the juniors, although I expect there are many who like myself already do!

It may be interesting if the AES were to formulate a questionnaire on the subject for its members — the results may be surprising.

Another point I should like to mention, is these so-called conservationists who go around daubing slogans and damaging other people's private property. They should look again and re-think their strategy.

Do they not realise that entomologists also strive to conserve! ! We do not just run around the countryside catching butterflies in a big net, then run home to kill and pin them, as is the common belief, which is totally wrong.

Do these conservationists breed, rear, and release different species to encourage new colonies? I think not, but they seem very quick to interfere, and condemn people who do.

I understand that the British Butterfly Conservation Society and the Amateur Entomologists' Society are striving to work closely. A very good idea!

I sometimes receive criticism from workmates, whilst they sit down for their lunch I go hunting the hedgerows and embankments etc looking for new specimens, but once I explain what my system is they understand better and have even brought specimens to me.

I take great pride in my work and feel proud to be a member of the AES.

I have learnt a great deal in my first year and hope to improve my equipment during the quiet winter months. Just one interesting point, a friend of mine was presented with a Humming bird hawk larva picked up in the Longport area, and I myself have seen several on the wing whilst working at Teignmouth station. I work for British Rail, Civil engineers department, and work in many out-of-the-way places, and this is an ideal situation to be in, to be able to look forward to going to work not knowing what I may find during the course of the day. I must close now as I am rambling on a bit, 'bye for now.

Yours faithfully,

G. R. Ward (8380)

Dear Sir,

Three cheers for John Tennent! What he said in Vol. 46 No. 354 desperately needed saying.

Entomologists who are not collectors are unlikely to be interfered with by collectors. What we serious collectors would ask, is not to have our chosen hobby interfered with by non collectors.

Many years ago, in what I would call the Good Old Days, the AES and its *Bulletin* catered for the needs of the collector, and particularly the collector who operated in the British Isles. Can we please go back to that situation? If not, should collectors be thinking in terms of setting-up a society which will cater for their needs and wishes?

Yours sincerely,

Roger Hayward MBIM FRES (2769)

Dear Sir,

May I please offer the following comments on your "Editor's Note" at the end of my (much shortened) article *An Attempt At Breeding Deaths-heads* on page 227 of *Bulletin* vol. 45?

Firstly, I measure the wingspan of moths by what I would call the traditional method, i.e. wingtip to wingtip and not wingtip to centre of thorax to wingtip.

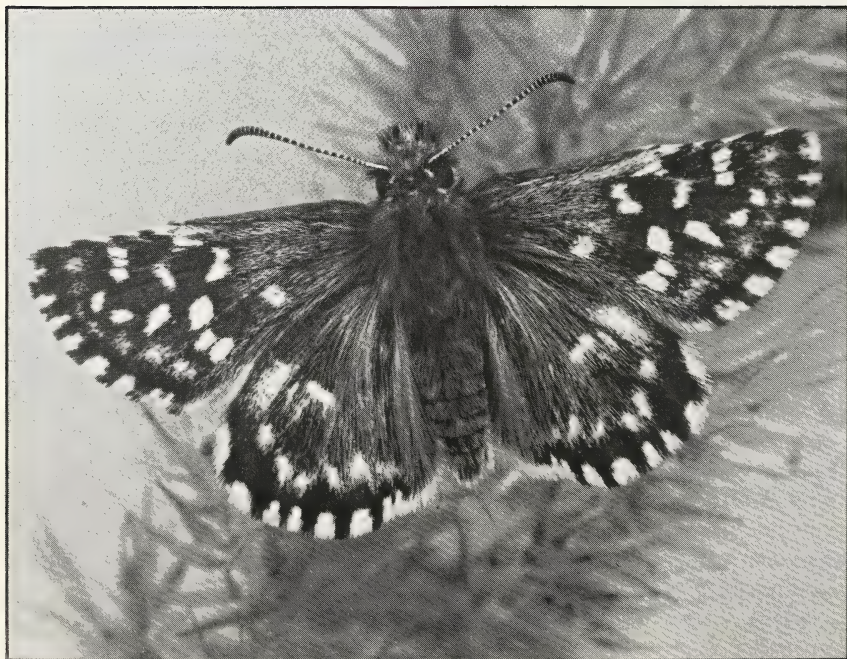
Secondly, the garage in which most of the pupae were overwintered is not heated but is between two houses: it has an uninsulated roof, however. The pupae were kept in a plastic box inside a larger plastic box.

The indoor pupae were kept in a desk drawer in a room centrally heated to 70°F for 4½ hours and to 65°F for six hours each day (but longer at weekends).

Finally, many books quote larval length, so there must be an accepted method of measurement. What do readers think?

Yours sincerely,

R. Haywood MBIM FRES (2769)



ANNUAL EXHIBITION 1986

This was again held in the Hounslow Civic Centre and took place on Saturday 11th October last. The popularity of this event resulted in the expected large attendance of members, many accompanied by their families, and of visitors. Exhibits were slightly up on the previous year and in addition to those individuals listed below our Associated Groups concerned with Exotic Entomology, Phasmids, Conservation, Insect Behaviour and Ants, put on their usual large and interesting displays. Peter Cribb gave an illustrated talk of "A Naturalist in the Balkans".

ANSORGE AWARD See Lewis, Owen.

BARRINGTON, RUPERT (6023) Water colour paintings of various butterflies.

BLOXHAM, M. G. (6551) A Selection of British Macrolepidoptera and Diptera.

CARTER, T. (6178) Aberrations showing extra large spotting of Shropshire-caught Large heaths (*Coenonympha tullia*) and a female Chalkhill blue (*Lysandra coridon*) with one hindwing nearly entirely blue.

CASSIDY, ALAN (7385) A series of large Cibachrome prints of Sulawesi lepidoptera (emphasis on the Lycaenidae) taken in 1985 whilst a member of the RES's Project Wallace expedition.

CASWELL, WESLEY (3133) A selection of specimens and photos of tropical silkmoths; Live examples of the USA 'Saddleback' moth (*Sibine stimulea*) reared for the first time in England.

CHALMERS-HUNT, J. M. (1633) A selection of British Microlepidoptera.

COPESTAKE, D. (8471) The Coleoptera taken while attending the Junior Fieldweek.

CRIBB, P. W. (2270) Examples of French butterflies captured or bred in 1985 and 1986. These include larvae of *Erebia epistygne* feeding on *Festuca* grass; other *Erebia* adults placed in juxtaposition in order to help members in identifying similar species and observe the racial differences that occur in *E. epiphron*.

EGGERS, BARRY (8157) Photographs of various Macrolepidoptera.

FITTER, DAVID (7841J) and **FITTER, ROBERT (8526J)** Various British Macrolepidoptera together with graphical data concerning them.

Ansorge Certificate of Merit.

FOX, DES (7831J) and **BURKE, SEAN (7266)** Various set examples of Irish Macrolepidoptera.

GARDINER, B. O. C. (225) Some forms and varieties of the Large cabbage white butterfly (*Pieris brassicae*) which have been bred over the past 35 years. Included the yellow, pale blue and albinistic forms as well as gynandromorphism, homöosis and an example of a butterfly dyed for a television début.

GARDINER, C. J. (5249) An incidental moth-trap and its catch; said trap being a security light at Castle Eden Dene which by its construction proved to be quite efficient at catching moths.

HALSTEAD, ANDREW (6346) Coleoptera found in 1986 included *Agonum sexpunctatum*, *Tritoma bipustulata*, *Orchesia undulata*, *Saperda populnea* on Wisley common; *Opilo mollis* at Royal Horticultural Society Gardens; *Blaps mucronata* at Hampton Court; *Trox scaber*, *Byrrhus fasciatus* at Sheerwater (Woking); *Dascillus cervinus* at Sheepheas; *Prionocyphon serricornis* in the New Forest; *Bitoma crenata* on Therfield Heath; *Ischnomera caerulea* on White Down, Surrey.

HODGE, P. J. (5335) Some rare and local British beetles and flies. Coleoptera: *Dromus quadrisignata* from Bushey Park (rare, few recorded; *Tachyporus formosus* from Buxted Park and Meare Heath (very local in marshes); *Oulimnius major* from stones in river Ouse at Brampton (only known from three or four sites); *Neggastrius sabulicola* from the river Wye (being the only recent record); *Fleutiauxellus maritimus* also from river Wye; *Selatosomus angustulus* from Disserseth, Radnorshire (June 8 1986, this being the third British record); *Athous campyloides* a male from Wraysbury and a female from Ringmer (a scarce nocturnal species); *Meligethese kunzei* from Buxted; *M. viduatus* from Meare Heath; *Epuraea rufomarginata* from Ashdown Forest; *Tetratoma ancora* from Crump's wood, Little Horsted; *Oulema erichsoni* from Meare Heath, Somerset (a new County as well as the first record for many years); *Cryptocephalus nitidulus* from Hackhurst (first record since 1945); *Hypera meles* from Nettley; *H. pastanacae* from Folkestone Warren (another only recent record); *Hylobius transversovittatus* from Ashcott Corner, Somerset (its only other locality is in Devonshire); *Trachodes hispidulus* was found with *T. ancora* (see above); *Bagous punctiollis* from Pevensey Level its only known locality; *Centorhynchus angulosus* was abundant on Meare Heath (but is a rare species); *Phytobius olssoni* at Stedham Common (rare and only known from two localities).

Diptera: *Epistrophe diaphana* from Hampshire; *Melangyna lasiophthalma* from Berkshire; *Microdon devius* from Surrey Downs; *Didea fasciata*, *Xanthandrus comtus*, *Platycheirus fulventris*, *Cheilosia sorrow*, *Rhingia rostrata*, *Ferdinandia ruficornis*, *Sericornyia lappona*, *Xylota florum*, *Anassimyia transfuga* all from East Sussex; *Eristalis rupium*, *Xylota caeruliventris*, *Platycheirus scambus*, *Melangyna compositarum* from various Scottish localities.

HOLLAND, PETER (6700) Photographs, specimens and text concerning the behaviour of Euglossine bees in Venezuela.

HOPPER, RALPH (4848) Various natural history subjects including eggs of the grass snake (*Natrix natrix*) and a nest of the dormouse (*Muscardinus avellanarius*).

JAMES, ROBIN (5005) Various British Macrolepidoptera.

JEALOTT'S HILL PHOTOGRAPHIC COMPETITION. The second photographic competition, organised jointly by the Amateur Entomologists' Society and Jealott's Hill Research Station, was a great success with more than thirty entries, all of a high standard. The subject was *Insects in the Garden* and the senior winner was Mr R. H. Marchant (3888) with a photograph of three silver-washed fritillaries feeding on bramble. The Junior award was won by Ben Shippey (8321J) with a photograph of a Red admiral feeding on a fallen apple.

JOHNSON, MARK (3464J) The life history of the Asian Chrysomelid *Sagra buqueti* with a description of its habits and an explanation of Sexual Dimorphism.

JUNIOR FIELDWEEK TEAM Put on a display of their activities which was reported on fully in the May issue of the *Bulletin*.

KEYS, ANDREW (8067J) Photographs taken in Britain and in France of various moths and butterflies.

LEWIS, OWEN (8132J) **Winner of the Anson Award** with an exhibit entitled "Moths in my Garden", a theme based on a study of catching moths over three years in a MV trap at Bridgend, Glamorgan, giving experimental results illustrated with graphs, paintings and photographs.

McLEAN, IAN AND COLLEAGUES. An extensive display of posters, photographs and publications illustrating the work of the Nature Conservancy Council with particular reference to the Invertebrate Site Register project.

MACNULTY, BASIL (4528) Various lepidoptera from Gower.

MANVELL, R. L. (7261) "Hawkmoths of the Night". A display with photographs and specimens of hawkmoths reared in 1986. A display of beetles and photographs taken by Mr N. Holford.

MAWSON, ALAN (3965) A showing of slides taken by Mr George A. Woods of Heywood and the Manchester Entomological Society. The slides show the life-histories of various butterflies, particularly the Comma (*Polygonia c-album*), Brimstone (*Gonepteryx rhamni*), Wall brown (*Lasiommata megera*), and, of moths, Pine (*Hyloicus pinastri*), Oleander (*Daphnis nerii*) and Spurge (*Hyles euphorbiae*) hawks. Also prints showing the life history of the Purple Emperor (*Apatura iris*) butterfly.

NASH, STEVE (7088J) Specimens and records from a MV trap operated in a garden at Farnham, Oxfordshire. **Anson Certificate of Merit.**

PARD, G. F. Le (4162) A selection of moths taken in Avon Forest Park (owned by Dorset CC and lying on the Dorset/Hants border) over the past four years. The moths include the first Dorset record of the Plain clay (*Eugnorisma depuncta*) and a Clifden nonpareil (*Catocala fraxini*) taken night of September 12/13 1985.

PATEL, S. J. (751) Butterflies from Gabon, West Africa.

- PAYNE, JOHN (5923) A selection of aberrations of British Butterflies.
- PORTER, J. AND CHURCH, S. H. An extensive number of photographs of the larvae of British lepidoptera and a request list of larvae still required for photographing.
- PRATT, COLIN (5965) Varieties of moths; two examples of Garden tiger (*Arctia caja*) one heavily blotched, one unusually lightly marked; a banded example of Sallow kitten (*Furcula furcula*); a form of Green silverlines (*Pseudoips fagana britannica*) with regular yellow marking replacing parts of the normal green colour; a variety of Common carpet (*Epirrhoe alternata alternata*) with reduced black forewing band.
- O'KEEFE, D. (8476) Various Macrolepidoptera collected in Kent during 1986.
- PENNEY, C. (3880) AND McCORMICK, R. F. (3375) A number of interesting moths caught during the year 1986.
- PICKLES, A. J. and PICKLES, C. T. (5225) Lepidoptera taken or bred during 1986. Powdered quaker (*Orthosia gracilis*) a series of the red form from the New Forest with Perth and Hampshire typical forms for comparison; a series of the Suspected (*Parastichtis suspecta*) bred ex ova from Perthshire; a series of Ringed carpet (*Cleora cinctaria*) showing variation in the New Forest population; specimens of Belted beauty (*Lycia zonaria*) from the Ardnamurchan Peninsular; examples of the Four spotted (*Tyta luctuosa*) from Portland; two examples of the Cloaked pug (*Eupithecia abietaria*); bred from larvae found in fallen spruce cones in Northumberland; a Welsh clearwing (*Synthedon scoliaeformis*) from Loch Rannoch.
- RAWLINS, A. C. (4857) A display of various exotic mimetic butterflies and moths.
- REVELS, RICHARD (3942) A selection of photographs of various kinds of British wildlife.
- ST. IVO SCHOOL Put of their usual magnificent display of livestock, including insects, snakes, reptiles and mammals.
- SIMPSON, MALCOLM (4859) A display of the Small tortoiseshell (*Aglais urticae*), mostly taken at Wistow, near Huntingdon, over the past ten years and showing a wide range of coloration and markings.
- SKINNER, BERNARD (1986) Varieties of British moths: A variable series of Heart and club (*Agrotis clavis*), Silver cloud (*Egira conspicillaris*) form *melaleuca*; Heart and dart (*A. exclamatoris*) ab. *posteli*, Cosmopolitan (*Mythimna loreyi*); Whitepoint (*M. albipuncta*); Northern drab (*Orthosia opima*); Light feathered rustic (*A. cinerea*); three examples showing extreme variation in Buff footman (*Eilema deplana*). melanistic examples of Lunar marbled brown (*Drymonia ruficornis*); Buff ermine (*Spilosoma luteum*); Uncertain (*Hoplodrina alsines*); an albinistic Large nutmeg (*Apamea anceps*); examples of Light feathered rustic (*A. cinerea*); Northern drab (*O. opima*); Orache (*Trachea*

atriplicis).

SMITH, N. N. (5866) A collection of butterflies and aculeate hymenoptera collected in Northern India and Nepal in autumn 1982. Species included *Antheraea pernyi*, *Papilio polyctor*, *Colias fieldii*, and Bumble bees from 11,000 feet altitude.

SOKOLOFF, PAUL (4456) A varied series of Lime hawks (*Mimas tiliae*) bred in 1986; Aberrations of Dotted border (*Lomaspilis marginata*), Heart and dart (*Agrotis exclamationis*), Hebrew character (*Orthosia gothica*). Examples of the four British forms of Silky wainscot (*Chilodes maritima*). Possibly immigrant Bordered straw (*Heliothis peltigera*) and Beautiful snout (*Hyperba crassalis*) from Orpington; Bred examples of Cosmopolitan (*Mythimna loreyi*) and Argent and sable (*Rheumaptera hastata*). The bred micros *Cochylus flaviciliana*, *Argyrotaenia pulchellana*.

STACEY, IAN (7653) Bred British butterfly varieties; Orangetip (*Anthocharis cardamines*) males ab. *crassipuncta* and ab. *costaenigra*, female ab. to *nigrocellularis*; Marsh fritillary (*Euphydryas aurinia*) ssp. *scotica* and two females approaching ab. *decrescens*; Black hairstreak (*Strymonidia pruni*), male ab. *progressa*, female ab. *excessa*, a female bilateral somatic form: a male Pearl-bordered fritillary (*Boloria euphrosyne*) approaching ab. *tatrica*; Large tortoiseshells (*Nymphalis polychlorus*) showing gain/loss of black due to temperature effects on pupae; Large cabbage whites (*Pieris brassicae*) crosses between ab. *coerulea* and ab. *fasciata* which showed traces of abs. *marginata* and ab. *posteromaculata*.

STOKES, DAVID (7630) Varieties of British butterflies including Swallowtail (*Papilio machaon*) with unusual forewing markings; Blackveined white (*Aporia crataegi*) with extra veins; Large copper (*Lycaena dispar batavus*) ab. *partimtransformis* and ab. *cuneata*; Pearl-bordered fritillary (*Boloria euphrosyne*) female ab. *stramineus* and female with dark hindwings; Silver-washed fritillary (*Argynnis paphia*) ab. *confluens*; Mountain ringlet (*Erebia epiphron*) ab. *caeca*; a series of Ringlets (*Aphantopus hyperantus*) bred from an ab. *arete*.

TENNENT, W. J. (7756) Photographs of butterflies in their natural habitats, including examples from Greece, Atlas mountains of Morocco, Indonesia and Sulawesi. The photograph of *Lamproptera meges* taken there on Christmas Day 1985 won the Royal Entomological Society's Photographic competition.

TREMBATH, D. A. (3486) A selection of the less common moths found in Dorking in 1986. These included Heart moth (*Dicystcla oo*), Waved black (*Parascotia fuliginosa*), Pale eggar (*Trichiura crataegi*).

WHITE, M. C. (6003) A bilateral gynandromorph of the Lulworth skipper (*Thymelicus acteon*) taken at Langton Matravers in 1986.

WOODS, BARRY Photographs of various insects.

YOUNG, D. A. (5547) Lepidoptera from Berkshire and South

Oxfordshire in 1986: Riverine species as Scarce burnished brass (*Diachrysia chryson*), Scarlet tiger (*Panaxia dominula*), Obscure wainscot (*Mythimna obsoleta*), Silky wainscot (*Chilodes maritimus*), Twinspotted wainscot (*Archanara geminipuncta*); White-barred clearwings (*Synanthedon sphecoformis*) together with extruded pupal cases: Moths from the edge of the Cotswolds, Nut-tree tussock (*Colocasia coryli*), Orange footman (*Eilema sororcula*), Buff footman (*E. deplana*), both forms of Dingy footman (*E. griseola*), Rosy footman (*Miltochristo miniata*); minor aberrations of Small copper (*Lycaena phlaeas*), Garden tiger (*Arctia caja*), Silver-studded blue (*Plebejus argus*), Clouded border (*Lomaspilus marginata*).



Ammophila sabulosa



DRYMONIA RUFICORNIS**Some notes on the Lunar marbled brown**

by John L. Gregory (4166)

OVA: These are whitish blue, smooth, in shape slightly more than a hemisphere, laid singly or in very small groups on Oak during late April or in May, and they hatch in about two weeks. In storage, empty eggshells tend to lose their bluish colour and turn white.

LARVAE: On hatching these eat only sufficient of the eggshell in order to be able to escape from it.

At first the young larva is light green and covered with a pattern of black dots both subdorsally and along the sides, the rather broad head being a paler shade of green. The subdorsal lines soon become bright yellow, and below these are two narrower yellow lines on each side, of which the lower ones enclose the spiracles. The half-grown larva is quite a handsome creature, with a bright green head and emerald-green or bluish green body, broad deep-yellow subdorsal lines, narrow yellow spiracular lines, and somewhat narrower yellow or greenish yellow suprspiracular lines. At this stage the earlier black spotting has completely vanished except for the spiracles which remain very finely outlined with black. The final instar larva is perhaps even more handsome than before, the former emerald-green of the head and body giving way to a light bluish green, the formerly rather broad yellow subdorsal lines becoming much narrower and sometimes broken at the intersegmental divisions, the fine suprspiracular lines having merged with the green ground-colour and disappeared, and the yellow spiracular line extending along the lower part of the head to include the mouth parts. Larval life lasted about five or six weeks in captivity.

PUPAE: These are dark brown, rather broad, formed in July, and normally diapausing until the following April or May, although a proportion of one batch, in captivity, actually overwintered twice, thus passing about twenty-two months in the pupa stage.

COCOON: Of rather tough silk, mixed with debris and soil particles usually just below ground.

IMAGINES: The wild specimens encountered in Cornwall seem to be almost entirely of the paler coloured forms with greyish white forewings marked with dark grey, whilst moths which were reared from ova received from other parts of the country (the Midlands and south-east England) have been mainly of the darker forms with strong blackish or very dark grey clouding of the basal and terminal areas.



Fig. 1. Final instar larva of *Drymonia ruficornis*.

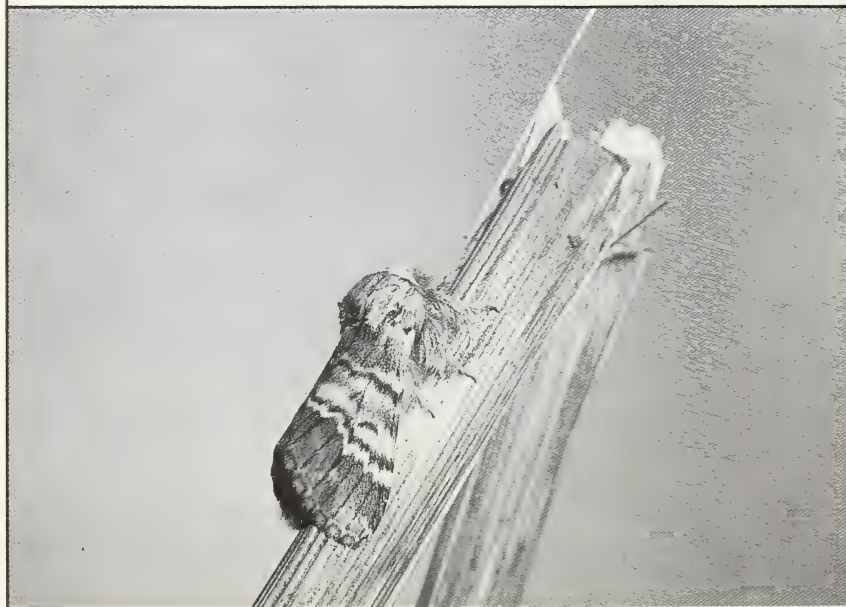


Fig. 2. Adult *Drymonia ruficornis* reared from West Sussex stock.

The moths appear in April and May, and in some years are fairly common at light in parts of mid-Cornwall, although the dot-distribution map shown in vol. 9 of MBGBI for this species indicates recent Cornish records mainly in the south-east of the county.

ACKNOWLEDGEMENT: Thanks are due to Mark Parsons who supplied ova of this species from West Sussex in 1979.

CONCERNING NEW BOOKS

by the Editor

Can it be because I am getting old, or is it that the book-buying public is far less discriminating than it used to be? Do our younger members actually prefer some of the present outputs of the commercial publishing houses? Would they, if they could get them, not prefer some of the typographic standards of yesteryear? I do not maintain that all books published in earlier years were perfect or of good quality. They were not, but when they were not they were cheap and on the whole even the cheap and nasty ones tended to keep an outward appearance of reasonably good typography. Not so today, however, when, to my mind at least, standards have fallen very low indeed in many cases and not just on the cheaper end of the market but on expensive books whose quality one would have expected to be kept up.

What has aroused my ire this time is the present state of The New Naturalist series. Appalling when compared with the majority of earlier issues. In fact the rot really set in when some years ago they published another edition of No. 1 (*Butterflies*) without the coloured plates. What a thing to have done and they certainly did not reduce the price accordingly. However, to take some very recent examples in the New Naturalist series which are published by Messrs Collins.

British Warblers No. 71. Set in smaller than usual (8-pt.) type, the type area on the pages is long and thin with a wide outer margin, but with the inner so narrow as to make reading difficult without cracking the back of the book. Since we have it paper not cloth bound, this means the joints are soon going to crack also. The reason for the wide outer margin is to accommodate the figure and illustration legends. Why? What earthly reason is preventing them from being in their conventional place below (or above) the matter to which they refer? Change for the sake of change methinks. There is not even any uniformity to this layout of the legends. Sometimes alongside; sometimes in the margin above; othertimes below; once or twice the legend is even in the 'right' (or conventional) place, although 'Table n' is located in the margin just to spoil things.

Heathlands No. 72 suffers from the same dreadful layout plus a dirty black mark down the centre of the book caused by bleeding the colour plates to the margin.

The New Forest No. 73 is much the same but it at least uses a larger typeface.

I feel I should make it clear at this point that however bad the typography and production may be, the quality of the contents is often excellent and it is such a shame to have the authors' words so often badly packaged. Exactly the same state of affairs, bad packaging but good contents, was, as was pointed out by our reviewer of the *Naturalists' Handbooks* (see *Bulletin* 43:99) produced not so long ago by the Cambridge University Press.

It has been shown by psychologists and teachers that the correct layout of type makes not only for easier and faster reading, but, as a corollary, when one does not have to concentrate on the reading, it is far easier to assimilate the contents. For ease and speed of reading, the size of the page in relation to the size of type used, the size of the margins and the non-intrusive layout of figures and captions are all-important. In so many modern works, like the *Naturalists' Handbooks* and these recent *New Naturalists*, we do not have this.

While one might be inclined to blame the author or editor of the book for this state of affairs, as the result of speaking with several such, I have learnt that in the matter of production they are over-ruled by the publishers. Consider today's large publisher. He is no longer the master of his house. He is a subsidiary of an organisation which in turn is a branch of yet another larger organisation. Books are expected to produce a profit and have to bear an unreasonable load of hidden overheads due to the parent organisation. They are therefore produced down to a price and not up to a standard. This is one of the reasons that small specialist publishers, such as Harley Books and E. W. Classey Ltd, for instance, are able to start up and flourish. They produce to a standard, as indeed are most of the publications produced by a Society. I am not alone in this view. Others, elsewhere, have commented upon the excellence of production of books produced by Natural History Societies and by Messrs Harley Books, E. W. Classey Ltd and Shire Publications.

It may well be that younger members in particular do not agree with these views and are quite satisfied with the quality and price of what they are offered in the book market today. If so, then I shall be only too pleased to let them have their say in these pages.

There is one thing that puzzles me. For some reason Messrs Collins who publish the *New Naturalist* series have decided on limited hardback editions of, I am informed, only a few hundred, when the potential market must lie in the thousands. In spite of my comments above about bad typography, there is such keen demand for them that even a

month or two after publication at a price of £20 or £22.50, second-hand 'new' copies are changing hands at £30 to £50 while mint copies of some of the older volumes (published prices 80p to £1.75) are now being quoted at £100! Mind you, this state of affairs is brought about by a 'collectors' market, to whom a pristine unread shelf-full is a *sine qua non* and not by the demand of the end-using Naturalists who would actually like to read them!

The spate of new entomological books published continues unabated with prices ranging from a few pounds up to nearly £100. In addition to those reviewed elsewhere in this issue, the following have recently come to our attention, some at least of which will also be reviewed in these pages in due course.

The spiders of Great Britain and Ireland by M. J. Roberts. Volume 2 of this fine and authoritative work is now published by Harley Books, completing the set of three volumes. Price £45.

Butterflies and other insects of the Eastern Caribbean by Peter Stiling. Pp112, colour illustrated. Macmillan. Price (paperback) £3.95.

California butterflies by John Garth and John Tilden. Pp230, illustrated. A field guide of some 250 butterflies emphasising behaviour and biology. California UP. Price £19.70.

The conservation of the chequered skipper in Britain. Pp.16, A4. Published by the Nature Conservancy Council. Price £1.50.

The management of chalk grassland for butterflies. Pp.80, A4. By the same publishers. Price £5.00.

Garden creepy-crawlies by Michael Chinery. Pp.176, illustrated. Whittet. Price £5.95.

Hoverflies by Francis Gilbert. Pp96, illustrated. CUP. Price, hardback £15.00; paperback £4.50.

How to begin the study of spiders by Prof. J. Cloudsley-Thomas. Pp32, illustrated. Richmond. Price (paperback) £1.95.

Butterflies of the British Isles: The Nymphalidae by Michael Easterbrook. A5, pp24 including eight pages of colour. Shire Publications. Price (paperback) £1.25. Another booklet from this publisher to the same format as their *Hawkmoths* (*Bulletin* 44:209). We still wonder how they do it for the price.

Collins guide to the insects of Britain and Western Europe by Michael Chinery. Pp.320, colour illustrated. Messrs Collins. Price (paperback) £6.95. Another book by this well-known popular author and much better produced and at a more sensible price than this publisher's *New Naturalist* series (see remarks above). Although already reviewed in these pages (*Bulletin* 45:204), mentioned again as we have had several requests to point out that this new work should not be confused with his much

earlier book entitled *A field guide to the insects of Britain and Northern Europe*.

Messrs Natural History Book Service, which we announced on page 90 of the May 1986 *Bulletin*, have moved from London and their address is now 2 Wills Road, Totnes, Devon TQ9 5XN.



AN OBSERVATION OF HYMENOPTEROUS PARASITES HUNTING FOR LARVAE

by Jan Koryszko

During the summer of 1986, while I was cleaning out my larvae cages and putting in fresh food for the larvae, I noticed that the waste of leaves, frass and a few cast larval skins which I had emptied out into the garden and scattered around my plants and shrubs (it makes good compost!) was attracting a number of hymenopterous parasites. They seemed to be searching for larvae on the ground and on the shrubs as well. Could it be that the smell of the frass is one way by which they detect their victims? Is this perhaps why some species eject their frass pellets a considerable distance away from where they are feeding and do they then suffer less from being parasitised? Species such as Skippers which live in blades of grass or leaves rolled together with silk to form a shelter seem to suffer less.

SOME NOTES ON THE EARWIGS *LABIA MINOR* (L.) AND *FORFICULA AURICULARIA*.

by Anthony Wootton (3331)

Apart from the cosmopolitan and popularly loathed *Forficula auricularia*, *Labia minor* is considered to be Britain's commonest and most widespread species of earwig, but how often is it seen and recorded by the average, non-specialising entomologist? Rarely, indeed, one imagines. After all, the species is infinitely less intrusive than *auricularia* and a fraction of the latter's size (c. 5-6 mm), so that it is far from conspicuous even when in flight.

I myself have seen but two specimens during nearly forty years' observation of local (Buckinghamshire) insects, both of them, needless to say, by chance. The first was in October 1969, when my diary records: "In early evening, in bright warm sunshine, saw a tiny earwig (c. $\frac{1}{3}$ inch, I suppose) fly onto our front garden fence, there flexing its pale-coloured wings. I wished to capture and look at it closely but it fell to the ground and I lost it." I had rather more luck with my second sighting, which occurred as recently as July 1986, when a specimen alighted on my arm whilst I was strolling down a country lane. This one I was able to capture and observe in captivity after placing it in a small circular container, whose circumference it explored with a tireless rapidity that only ceased for short intervals. From time to time, it took short flights, after rather laboriously flexing and spreading its supremely delicate wings, flushed with a delightful mother-of-pearl iridescence, and using its forceps, which it kept continually raised, both to open and then to close them again. I had intended to release the insect after a day or so's observation of its behaviour, but despite the insertions of a little water and what I considered to be a variety of likely foods — moistened sugar, jam and crushed aphids — it died the day after capture, apparently from dessication, which at least allowed closer examination and description, as follows: overall length 4.75 mm (including forceps 1.25 mm); antennae (six segments) 1.5 mm; tegmina 1.3 mm; colour: dark tawny brown, except for the uniformly pale yellow legs and pale brown forceps, the latter wedge-shaped with no discernible tip to the pygidium.

Labia minor is an habitual flier, which makes it all the more puzzling that the common earwig is so rarely seen to take to the air, despite the possession of equally well developed wings. I have certainly never seen *auricularia* in flight, or heard of anyone else doing so, although there are apparently records of it (e.g. Brindle 1977).

Perhaps it is a case of regressive evolution, in that the common earwig's terrestrial, omnivorous (partly scavenging) habits have tended to render flight increasingly unnecessary. The species' insistence on crawling everywhere surely casts doubt on the oft-mooted etymology of

earwig as being a corruption of 'ear wing', in reference to the vague resemblance between the insect's wings and the outline of the human ear. The explanation might apply to *minor*, perhaps, but the latter would scarcely have been seen often enough, or identified when it was, to give rise to such an appellation.

Folklore's more sinister linking of earwigs with the human ear presents an equally intriguing topic for discussion, although it is one that, so far as I am aware, has received scant attention in the literature. Most pragmatic entomologists incline towards dismissing the theme as no more than an old wives' tale, some supporting their contention by suggested a couple of plausible alternative origins of 'earwig' that take us well away from the usual dictionary offering of Anglo-Saxon *ear* (ear) and *wicga* (an insect runner or wriggler) and the word's extension into the everyday language in a figurative sense to mean a (human) gossip or eavesdropper (one who, so to speak, 'gains the ear' of another). One theory is that 'ear' is here really an ear of corn or other plant, which would certainly accord rather neatly with the insects' habit of secreting themselves between plant fronds, petals, etc. Another has it that 'ear' is, in this context, Old English *oers*, from the same root as in wheatear (*hwit-oers*, or the white-rumped bird); and one cannot but admit that 'arse-wiggler' makes an equally apposite epithet for an insect only too ready to raise and spread its pincers when under threat!

Even foreign names may not always be quite what they seem, or so the sceptics tell us. Many, such as the German *ohr-wurm*, Danish *orentvist* and Russian *ukhovertki*, appear to be unequivocally ear-linked. On the other hand, the French *perce-oreille* ('ear-piercer') is widely considered to have no horrific implications but refers simply to the similarity between the male earwig's strongly curved forceps and the tool once used for piercing the ear-lobe prior to earring suspension. Other European names for the earwig, among them the Portuguese *fura-orelhas* and Rumanian *urechelnita*, may have similar origins, while a good many more from other parts of the world betray no reference to the ear at all.

It would doubtless be comforting to those many people who view earwigs askance to be able to dismiss 'earwiggling' as no more than a nominal misunderstanding. The problem is, however, that it overlooks both the strength of a tradition which apparently stretches back into the mists of time and, more particularly, a wealth of evidence to support it. The plain fact is that there are numerous records of earwigs making their way into the aural passage leading to the eardrum and having to be extracted therefrom, commonly after they had become entombed in cerumen or ear wax, which one imagines is exuded in greater quantities in such circumstances. Zoologist Dr Maurice Burton tells me, for example, that when he wrote a rather dismissive article on earwiggling for the *Daily Telegraph* a few years ago, he received a spate of letters from doctors

drawing his attention to cases recorded in GPs' casebooks, as well as actually published in the *British Medical Journal* (1934) and the *Journal of the Postal Microscopical Society* (1883); others came from lay people, who had commonly suffered their intrusions after sleeping on the ground. I myself have found accounts of earwig ear-entry in *Countryside*, the Journal of the British Naturalists' Association, for 1912, while I have even been able to catechise two further, utterly reliable victims in person, one of them a farmer, who experienced his particular earwigging whilst picking apples. So far as I am aware, instances of ear-inveiglement from other insects are negligible by comparison, and more clearly fortuitous, which suggests that there may be something in *auricularia*'s nature and physiology which prompts it to make such ventures rather more frequently — if not, I must emphasise, habitually — than other insect groups. A significant point, perhaps, is that most cases of earwigs secreting themselves in the outer ear occur whilst the 'host' is sleeping out of doors, on the ground, notably during camping, which prompts one to wonder whether earwigging might have occurred much more frequently in the past when people often lacked the luxury of a proper bed. Moreover, since I have questioned only a small number of people in the matter of earwigging and made but a limited perusal of the more likely literature, the instances referred to could well represent but the tip of the iceberg, in reflecting a tendency that, even today, is far commoner than has hitherto been supposed. After all, it is reasonable to assume that only a very small proportion of such intrusions ever find their way into the press, specialist or popular.



... occur whilst the 'host' is sleeping out of doors ...

Just why earwigs (occasionally) behave in this way is far from clear. Presumably it has something to do with the species' thigmotaxic preference for shelters which allows it to press as much of its body against some smooth, slightly moist, preferably curved surface as possible. Normally, overlapping foliage, peeling bark and hollow canes meet *auricularia*'s requirements in this respect, but a wandering earwig, encountering a conveniently positioned ear, might well commandeer it as a temporary shelter, its reluctance to retreat being perhaps attributable to a variety of factors, among them the earwig's negative phototropism, immolating cerumen, and the host's natural reaction of poking in a finger, perhaps causing injury to the intruder. There is even a possibility that the common earwig retains some (ecto)parasitic tendencies, such as are evidenced by certain Indo-Pacific and African earwigs (Arixeniidae, Hemimeridae) that subsist on the skin exudates of bats and rats. Certainly, *auricularia* is not above chewing at the base of human hair follicles, on hair and leg, as I know from personal experience, while I have also known it to consume other fatty substances, such as soap. Might it be that earwigs, far from being deterred by the ear's cerumen, as has often been suggested, actually relishes it, thus providing another reason why the intruders are often so difficult to evict?

Earwiggling, or a firm belief in it, has a lengthy pedigree, dating back in Britain at least to the 16th century, when we find Philemon Holland (1552-1637) telling us in his translation of Pliny's *Natural History* that the old Roman philosopher's (secondhand) recommendation for evicting an intrusive earwig was to spit in the ear or, presumably, get someone else to do it (making an interesting comparison with my farmer interviewee, who told me his earwig was induced to retreat by a friend *blowing* in his ear!). Actually, it is not entirely clear whether Holland was imposing his own prejudices or experiences on Pliny's text, since the latter merely refers to 'animal' intruders in the ear, and I have checked with the Bodleian Library, who confirm that all known texts in the original Latin are consistent in this respect. Nevertheless, it is not unreasonable to assume that earwigs are what Pliny primarily meant, more particularly since it appears that the Romans had no specific name for Dermaptera. Are there, I wonder, any more directly identifiable references to earwigs and the ears in other classical or later texts?

One further aspect of earwiggling which, on the face of it, takes us into the realms of pure fancy, relates to the possibility of earwigs not merely entering the outer ear but burrowing their way into the middle or inner ear and even into the brain. One can find the theme used in the popular literature, including a horror story ('Boomerang') by Oscar Cook, which tells of the dreadful revenge exacted by a jealous husband in inserting a large tropical (gravid!) earwig into the ear of a bedridden rival, and a nursery poem ('The Earwig') by A. P. Herbert. The last-mentioned refers, rightly, to the common earwig's tendency to make its way indoors

and even secrete itself in bathroom sponge and towel, which would thus present it with an increased opportunity for initial intrusion, even if we ought to be able to dismiss out of hand the suggestion that it might also actually breed within one's ear or brain-pan! However, I wonder if the latter is really entirely fanciful? Admittedly, it is doubtful if the common earwig, at least, could chew through the tympanum (eardrum), but what about people with perforated eardrums? An earwig could easily make its way further into the ear in such circumstances and, if gravid, deposit its eggs. It might well also be able to survive and rear its nymphs in such an ostensibly unfavourable environs — which would not be all that dissimilar from its more usual nursery sites — perhaps subsisting on secretions from the ear passages. (The female *auricularia*, it will be remembered, is renowned for her devotion to eggs and young, and is also occasionally parthenogenetic (Behura 1956).) Many truly parasitic insects live in far more 'unlikely' situations, among them jigger fleas and warble- or bot-flies, whose larvae develop actually within the tissues of mammalian, including human, hosts.

Might it be, therefore, that the extremest form of earwiggling has actually happened on one or two, presumably unrecorded, occasions, and come down to us in misty folklore to add a further dark layer to *Forficula auricularia*'s already much tarnished image? I believe it to be at least possible.

REFERENCES

- Behura, B. K. (1956) The Biology of the European Earwig, *Forficula auricularia* Linn., *The Annals of Zoology*, Agra, Vol. 1, No. 5, 138-142.
- Brindle, Alan (1977) British Earwigs (Dermaptera), *Entomologists' Gazette*, Vol. 28, 29-37.
- Hincks, W. D. (1949) *Dermaptera and Orthoptera*, Handbooks for the Identification of British Insects, Vol. 1, Part 5. Royal Entomological Society.
- Richards, O. W. and Davies, R. G. (1977) *Imms' General Textbook of Entomology*, 10th Ed. Chapman and Hall.
- Wootton, Anthony (1986) *Animal Folklore, Myth and Legend*. Blandford Press.
- Pliny, *Natural History* (1963) with an English translation by W. H. S. Jones, 10 Volumes, Loeb Classical Library, Heinemann and Harvard University Press. (Vol. VIII, Book XXVIII for earwig reference.)

THE MILKWEED OR MONARCH

You flew from the land of your birth,
To travel around the earth,
You came from afar,
Like the light from a star,
To show the world how beautiful
and magnificent you are.

Jan Koryszko (6089)

BOOK REVIEWS

Advances in insect physiology, vol. 18. Edited by M. J. Berridge, J. E. Treherne and V. B. Wigglesworth. 8vo, pp.445. Academic Press 1985. ISBN 0-12-024218-4. Price £65.00.

There are six papers in this volume of "Advances in Insect Physiology" with contributions from the United States, Britain and West Germany.

The first paper is entitled "Ant Trail Pheromones" and provides a valuable review of the part played by these pheromones in different Sub-families of the Family Formicidae. Although the text contains a certain amount of chemistry much of it is devoted to the glandular source of the pheromones and their biological role. The authors point out that there is surprisingly little species specificity and postulate that the trail pheromone may be used in conjunction with other chemicals. They suggest that better understanding of these mechanisms may well assist in the control of hymenopteran pests.

"Pattern and Control of Walking in Insects" is the second contribution. This is a lengthy but comprehensive treatise on the subject and the author covers not only the mechanisms of this form of locomotion but also its neuroanatomy and physiology.

In the third paper, "Cyclic Nucleotide Metabolism and Physiology of the Fruit Fly *Drosophila melanogaster*" the authors emphasise the value of the fruit fly as a model for learning more about the role of cyclic nucleotides. Its particular attraction in this respect is the ease with which it may be genetically manipulated. The authors stress the value of combining biochemical and genetic analyses in such research.

The next contribution is "The Developmental Physiology of Color Patterns in Lepidoptera". Butterflies and moths provide excellent examples of pattern and a study of such features as wing development, sources of colour and distribution of pigment permits better understanding of its development and evolution. The author advocates the use of the lepidopteran colour pattern as a developmental model system; in his opinion there is no other that is "physically as simple and morphologically as diverse."

"Nonspiking Interneurons and Motor Control in Insects" is the title of the penultimate paper. Nonspiking interneurons have an important role in insects, contributing substantially to the control of movement. The author discusses their features, both anatomical and physiological, and emphasises how much remains to be learned of their function in animals.

The final contribution, "Structure and Regulation of the Corpus Allatum", deals with organs that were for many years thought to be part of the nervous system but are now recognised as endocrine glands.

Amongst topics discussed are the anatomy and regulation of the corpora allata and various aspects of juvenile hormone biosynthesis.

At first sight this book would not appear to be relevant to the amateur entomologist. Three of the papers are concerned with detailed aspects of insect physiology or biochemistry and are clearly directed towards the professional with specialist knowledge in the field. The other three, however, on pheromones, walking and colour patterns, could prove of some interest to those who keep insects in captivity or study them in the wild. Certain parts are certainly pertinent — for instance, the section describing the production of “phenocopies” (developmental abnormalities) as a result of cold or other stresses: lepidopterists have for long recognised that colour aberrations may be induced by exposing pupae to abnormally high or low temperatures. The amateur will not however, be familiar with many of the concepts described and may even question certain procedures, such as the performance of surgical techniques on living insects in order to learn more about (for example) leg movement or eyespot development.

The book is professionally produced, relatively free of spelling or typographical errors and contains a wealth of scientific information in its text and reference lists. The spelling throughout is American.

It is important that amateur entomologists are aware of the many developments in insect physiology. Few will want to purchase this volume but a number may find its contents of sufficient interest to warrant borrowing it from a library.

John E. Cooper

Country Life Guide to Dragonflies and Damselflies of Britain and Northern Europe by Bob Gibbons. Small 8vo, pp.144, colour illustrated. Hamlyn Publishing 1986. Price £12.95 (hardback); £7.95 (paperback).

This is an interesting small book for the general naturalist. Topics such as flight period, length of life, migration, dispersal, together with parasites and predators are covered. Keys are provided for both the larvae and adults.

Each species is dealt with by description, similar species being differentiated, behaviour, the larval stages, status and distribution. The text for this section could have been enhanced by not having headings buried in the text as if produced by some poor word processing. The localities given are of a very general nature.

The book has some superb photographs of living insects, including *Ischnura elegans* being fed to a nestling by a reed warbler. A short bibliography is included but it fails to mention the AES and our leaflet on the Odonata.

Competing against an interesting explosion of books on dragonflies of late, its modest price and fine photographs make it a useful addition to a general library.

Sid Painter

Butterfly Distribution Maps — Present State of Recording in Dorset 1985 by Dorset Environmental Records Centre, 1986. A4, tape bound, soft cover, pp.49 incl. 49 maps. Price £1 (+ 35p p&p) from Dorset County Museum, High West Street, Dorchester DT1 1XA.



The Dorset Environmental Records Centre (DERC) supplied the maps for Thomas and Webb's *Butterflies of Dorset* (1984) and have now produced an even more comprehensive set of records up to the end of 1985. This booklet is simply a set of maps breaking Dorset into its 2613 one kilometre squares, one map showing the extent of records received and 48 for different butterfly species. Unlike Thomas and Webb, the Essex and Small skippers are treated separately. While all the post-1970 records are lumped together in Thomas and Webb's book, this new booklet separates 1970-1979 from 1980-1985 using symbols that do not contradict those defined in the earlier maps (a good thing). The one feature I don't like too much is the sequence in which the species are listed: rather than the conventional taxonomic sequence to suit anyone who's seen a butterfly book or the alphabetical sequence of English names to suit anyone who hasn't, the maps are arranged in alphabetical order of generic names . . . *Aglais*, *Anthocharis*, *Apatura*, *Aphantopus* and so on.

How has recording come on since Thomas and Webb's gigantic inspirational boost? I make it that about 100 of the 360 "post-1970" one km square gaps have been filled, and there have been considerably more records for all species including some of the Dorset rarities like the Brown hairstreak and Adonis blue. There are about 70 regular, active recorders in the county, but still gaps, most noticeably in the north and west. Please help out in these areas if you can. The next DERC edition of the maps could be out at the end of the decade, but watch out for a new edition of Thomas and Webb in the meantime.

The Records Centre has run an Odonata recording project in 1985 and 1986 and the maps will be out soon. This year it's the Ladybirds 1987 campaign following the publication of *Ladybirds in Dorset — a Guide to their Identification and Natural History* by Adrian Moon (£2.40 + 35p

p&p from DERC, address above); with only 43 one km square records for the common Seven-spot ladybird there's an enormous way to go! A Woodland Recording Scheme is continuing too, with the aim of cataloguing Dorset's Ancient Woodlands.

How can DERC work so effectively? There's the local volunteer support, of course, but one vital feature that might be worth investigating by other record centres must be the on-going Manpower Service Commission scheme which funds two graduate biologists to work full-time at the Centre: "absolutely vital", the Keeper of Records tells me. Please, MSC, keep the assistance coming.

Duncan Reavey

A history of the Hope entomological collections in the University Museum by A. Z. Smith. 8vo, OUP 1986. Price £15.00.

The book covers the setting up of the collection since the original gift by Reverend Hope in 1849 to the present day and also lists the moths and some of the library's contents in its appendices. Although the contents of the book are interesting and well presented I found the chapters dealing with the setting up of the Collection very brief at times, with the actual history of the Collection covered in 12 pages for the period of 135 years!

It was also very disappointing that only three pages covered the library, as all entomologists know this is a central part of any collection and in this instance warranted a more complete list of volumes donated under the original gift as well as a list of important works obtained since then. However, I found the appendices much more thorough and the rest of the book is well worth reading.

Appendix A covers the archives of the library which includes manuscript notes, letters etc. Appendix B covers the Collection and its various donors: the entry which most captured my imagination was "Prest EEB — 161 rare moths much needed in British Collections". Which moths I wonder? They're probably quite common now!

As a book it sets an example for all museums to copy so that we can become aware of the various museum collections and their contents. However, the book is more of a reference book and probably better borrowed from a library than purchased as the contents have limited use.

C. C. Penney

Butterflies and Moths of Derbyshire by F. Harrison and M. J. Sterling, Part Two (Larger Moths), pp.137, paperback. Derbyshire Entomological Society, 1986. Price £5.50 plus postage.

The first volume of this work was reviewed in this publication, Vol. 45, p.87. The work covers the whole of the larger moths of Derbyshire together with tables depicting species extinct, twentieth century colonists, endangered species, and species currently on the increase. The book

concentrates on the larger moths, with each species being considered in terms of its residential status, life history, and general comment. It is disappointing that distribution maps are not included for each species but the comments are interesting and informative. The standard of presentation is high and despite the poor binding of my copy, this does not detract from a very useful book to assist with the study of Derbyshire Lepidoptera.

C. C. Penney

Insect locomotion Edited by M. Gewecke and G. Wendler. 8vo, pp.(10); 254. Paul Parey, Berlin and Hamburg 1986. Price (paperback) £42.15.

This book is based on a symposium of the same name which was held as part of the XVII International Congress of Entomology, Hamburg in August 1984. The twenty-seven papers cover mostly flight and walking, only two are devoted to swimming.

As an amateur, this is not a book I would consider buying. The subject matter is very specialised and much of it, I would think, is of little interest to readers of the *Bulletin*. Most of the papers are quite readable, however, and some provide fascinating details of insects' lives. For example, a study in Germany indicates that the male Banded agrion dragonfly (*Calopteryx (Agrion) splendens*), which will be familiar to many readers, uses its strikingly marked blue wings to communicate with other individuals. Different movements have been filmed which indicate both threatening behaviour to other males and courting towards females. The author concludes by saying that the reference to the "poor" flight of this species is incorrect, the signalling strategy is an effective way to save energy by reducing competition for females and promoting undisturbed pairing.

Most of the insects studied are those hardy perennials of laboratory entomology: the Laboratory Stick insect (*Carausius morosus*), the Water beetle (*Dytiscus marginalis*) and our old friend the Migratory locust *Locusta migratoria*).

The book is a well-finished, glossy paperback and although it may be essential reading for insect behaviour specialists, it will also be of general interest to other entomologists.

Colin Hart

Sphingidae Mundi — Hawkmoths of the World by Bernard D'Abrera. Large quarto, pp.226 incl. coloured plates. E. W. Classey Ltd 1987. Price £97.50 (includes post).

In May I was invited by E. W. Classey Ltd to attend at the British Museum (Natural History) for the launching of this latest work of Mr D'Abrera.

The pleasure of meeting fellow enthusiasts was a background for inspecting this momentous tome, based on the collections of hawkmoths housed in the Museum. The work follows closely the format of the author's volumes on the World's butterflies. These are basically aids to the identification of species from their facies and the plates carry photographs in colour, full-size, of set specimens, in the main from the B.M. collections. The text gives a brief description of the characteristics of each genus — imagines, larvae, pupae and range of known food-plants. The species follow, giving the name, author and date with brief notes on distribution and other relevant information, including food-plants where known. Many of the specimens figured are type material. The plates are the primary method of identification and are generally excellent. At the launching we were able to see a case of specimens, the basis of one plate, the transparency from which the plate was made with the book plate beside it. The results were gratifying, the last-named losing little of the original brilliance and colour tones.

Some 160 genera and over 1,000 species are dealt with and there is an index for both genera and species. There is an interesting introduction by the author who gives a brief history of work and literature on the hawkmoths and states that this volume is not a classification nor a revision but more an illustrated catalogue. He says that he wishes to avoid "such debates on taxonomic science that throw nomenclature into graver disrepute than it already finds itself". He also hints at a second volume on the early stages and their botanical associations.

Both the author and the publishers are to be congratulated on making the riches of the British Museum collections available to all enthusiasts. Certainly 'sphingid' enthusiasts will want to possess this book but the price recognises the high cost of producing such works.

PWC

Butterflies of Europe: Vol. 8: Aspects of the conservation of butterflies in Europe by Otakar Kudrna, pp.323, 57 figs; coloured plates (text is in English). Aula-Verlag, Wiesbaden 1986. Price DM248 (£80 approx.).

This is the second volume of eight to be published on European butterflies, the first being a bibliography of publications on the subject. The main thrust of the volume is conservation but chapters are included on taxonomy. The importance of butterflies as an indicator of the ecological wellbeing of an area is emphasised. The types of habitat (biomes) are considered in wide terms e.g. mountain, deciduous forest, tundra, etc, and conservation is viewed under 'unmanaged' and 'managed' regimes.

A section deals with collecting versus non-collecting and it is stated that it would seem that the present witch-hunt 'against' is a convenient political manoeuvre that distracts public attention from the real causes of the decline of butterflies. In West Germany there is a total ban, since

1981, yet the scientists employed by the relevant ministry on animal conservation do not include one entomologist despite 80% of the species of fauna being insects. Kudrna comments on a case of overcollecting of *A. paphia* in Czechoslovakia where for three seasons the butterfly was heavily collected for decoration purposes and became very scarce. In the next five years it recovered slightly but at that stage major changes in forestry management made the area no longer suitable for the butterfly. The significance of Red data books is political rather than effective conservation and, as in Germany, a ban on collecting means little new information is available as to status, etc which was previously provided by field collectors. There is still a paucity of knowledge of distribution and ecological requirements.

Chapter three starts with an outline of the biographical history of European species and then deals with the effects of man's impact (anthropogenic factors) — drainage, agriculture, forest management, urban spread, pest and weed control, pollution and tourism. Chapter five continues this aspect and surveys the status of each species in each country, evaluates ecological requirements, vulnerability and other aspects of conservation needs. The colour shots of habitat are excellent. Chapter six proposes a comprehensive conservation programme dealing with specific sites, rare endemic species, guide lines for collecting and trade, pointing out that decisions by politicians will be necessary, supported by sound scientific advice. This will require a much better understanding of the ecological needs of butterfly populations. The simple listing of species not to be collected, as in France, or total bans as in Germany, adds nothing to conservation and may be counter-productive if habitat destruction and mismanagement continue.

My main criticism of the book lies in the Chapter four which deals solely with nomenclature (taxonomy). There is a glossary of taxonomic terms which is useful but the author then proceeds to discount the work of such taxonomists as Warren, Higgins, Hemming and Verity who broke down very large genera into smaller groups containing species with identifiable similarities which appeared to indicate evolutionary relationships. Kudrna throws these aside, listing 39 species in the genus *Polyommatus*, placing all the Coppers in *Lycaena*, 31 species in *Hipparchia*. The genera *Mellicta*, *Clossiana*, *Fabriciana*, *Artogeia*, *Strymonidia* and others are lost. Many sub-species are given specific status, e.g. *Pieris flavescens*, *Lycaena subalpina*. There are eighteen pages of notes in which he explains some of the reasons for his nomenclature but it can only cause chaos. Names are meant to help in communication and with the publication of Higgins work of the classification of European butterflies one would have hoped for new works to relate to this.

It is well that Vol. 8 has come out in advance of the other six volumes which will be dealing with the families, otherwise one might not have

known what we were talking about. However, I feel it adds nothing to this volume and only detracts from the very strong message on conservation.

The book is available from E. W. Classey Ltd, but at £80 (£70 if one subscribes to the series) it will be beyond most amateurs and the price seems excessive when compared with comparative British publications.

PWC

BREEDING THE MARSH FRITILLARY (*EUROYDRYAS AURINIA*)

by Don McNamara (5573)

The following technique, the result of much trial and error, resulted in 1985 in a "bumper crop" of Marsh fritillaries, despite the generally poor weather in early summer and although specifically designed for this insect, has also been successful for the Glanville fritillary (*Melitaea cinxia*), the Common blue (*Polymmatas icarus*) the Small copper (*Lycaena phleas*) and the Dingy skipper (*Erynnis tages*). Presumably it can be applied to many other smallish species and its simplicity and modest resource requirements, both spatial and material, should recommend it to those contemplating the "quantum leap" from observation and recording in the wild to practical domestic breeding.

Firstly: prepare the foodplant area. I use a builders/decorator's plastic bucket with the handle removed — the larger the better, for it holds more plants with less watering — which is filled with soil and planted with teasel and scabious (see below) in the autumn so that it is well-established for the following summer. (It is appropriate at this stage to have two or three spare containers planted-up as well.)

Secondly: on top of this a rigid net cage is put, approximately a two-foot cube (61 cms) with a circular hole cut in the plywood floor enabling the plants to grow through. The hole should be slightly smaller than the lip of the container. Pack the lip/wood join with peat to make it insect-proof. A circular hanging cage would also do, suspended over the plants with a skirt and a drawstring to enclose.

Finally: the whole contraption should be placed in a sunny position, raised about two feet from the ground, on a box or small table, to cut down the chance of invaders, particularly ants. You must be vigilant for 'nasties' at every stage of the process, earwigs and spiders especially, and check that the cage is insect-proof generally.

In June or July the egg-mass or caterpillars should be placed in the middle of the food-plants whose upper leaves will soon be incorporated into the larval web. The young larvae, which are gregarious, tend to migrate towards the sunny side of the cage, so if you see them moving towards the netting as they chew their way across the foliage, just turn

the whole thing round. While tiny they seem to be able to penetrate all netting no matter how fine — I've often found them *en masse*, quite still and settled on the outside of the cage.

As the cooler autumnal weather approaches, the larvae slow down and gradually stop feeding, eventually retiring into a web hibernaculum. Even if this seems to be withered, wet and generally a horrible mess, don't be tempted to break it open to see if anything is there. Also, during this somewhat uninteresting time, still be vigilant — spiders may enter when quite small but grow rapidly if incarcerated with a good food supply. They are very destructive.

The overwintering larvae must not be "mollied" in any way. They ought to be fully exposed to the elements which they can handle quite successfully.

With the onset of Spring the larvae wake up, nibble a bit and gradually increase such behaviour until they eventually spend much of their time eating. As they grow larger they tend to be less gregarious. In May and June they gain size rapidly and have healthy appetites, so it is vital to have standby food supplies. I have three or four spare cages with foodplants and decant the larger larvae into these as necessary.

Handfuls of fresh foliage may be put on top of the larval webs, or where the caterpillars congregate — this helps the established plants to recover. Don't forget to water if the soil becomes dry. Among the teasel/scabious I put seeds of the domestic candytuft (*Iberis* sp) and red valerian (*Centranthus ruber*), both plants having a succession of blooms which are most attractive to butterflies. The foodplants I find most successful are:

Dipsacus pilosus (small teasel), Biennial, propagated by seed.

Dipsacus fullonum (large teasel), Biennial, propagated by seed.

Succisa pratensis (devilsbit scabious), Perennial, propagated by seed and plant division, slow to increase.

The teasels have a good acreage of leaf, especially in their first year. In their second year they spring up to flower and seed. These will grow in any soil and have the advantage of providing plenty of leaf throughout the year, which is useful if larvae wake up in the early spring while the scabious has yet to fully grow. Scabious dies back in the winter and may not produce any substantial growth until April or May.

Other foodplants mentioned in the literature are:

Lonicera periclymenum (honeysuckle) and its various cultivars.

Symphoricarpos rivularis (snowberry).

Valeriana dioica (marsh valerian).

Digitalis purpurea (foxglove).

Larvae will also eat *Plantago lanceolata* (ribwort or narrow-leaved plantain), but only, apparently, as a last resort.

Pupation occurs in July and larvae hang suspended all around the cage, often grouping and depending upon the general temperature, should be out in ten to fourteen days.

On emergence a plentiful supply of nectar-plants should be available, preferably growing, but which can also be supplemented by cut blooms in bottles standing in the corners of the cage. These ought to be renewed every two days as cut blooms do not produce nectar, or they can be sprayed with a 10% honey-water solution to top-up the nectar. Of prime importance is the location and aspect of the cage. Butterflies invariably pair in direct sunlight. If fed and fairly warm, with the sun shining on them, pairing is easy.

The gap between the top of the plants and the roof of the cage should be about three to four inches (7 - 9 cms); they often congregate on the roof-netting but will come down to feed and pair if the plants are within range; if the cage is too high some will get 'lost' at the top.

Eggs are laid underneath the tips of the leaves of the plants. They are yellow at first, then the batches darken prior to hatching. When all three foodplants are simultaneously available (small and large teasel, devilsbit scabious) the female prefers to lay on small teasel and the scabious, although she will lay on the large teasel as well. In 1985, due to an unusually cool and damp summer it took up to seven weeks for some batches to hatch out, instead of the usual two or three.

Particular points to take note of:—

1. Invaders into the cage. Every time you open the cage door something tries to sneak in. Check frequently.
2. Do not overwinter larvae indoors: if too moist they can succumb to fungal and other infections; if too dry, they will dehydrate.
3. Make sure supplementary supplies of foodplant are available — an eggmass may have 200 - 300 larvae.
4. Sunshine and nectar for the adult insects. They need to drink frequently — so a fine-mist water spray is very useful. The interior of a black-netted cage is always warmer than its surroundings and forms a micro-climate of its own. It may be necessary to spray frequently if very hot.
5. Large teasel, in its final stage (second year) shoots up and where the lateral leaves join the stem, pools of water form. This, together with the slippery upper surface of the leaves, and the downward-pointing prickles on the stems, seems to be an adaptation designed to encourage insects to drown. Whether this is merely a defence mechanism or some transitional evolutionary stage towards being an

insect-eating plant (using the dissolved protein), is difficult to tell: the result is the same — dead, bloated and putrifying larvae. (Curiously the larvae of *Sphinx ligustri* (the privet hawkmoth) negotiate this plant without any apparent difficulties, probably due to superior clasping power). One can either snip-out the stems when the plant starts to shoot, or cut a small hole at the base of the leaf. There is no problem with small teasel.

It is sad to note that the marsh fritillary has declined so drastically in the wild mainly due to changes in land-use, but it is pleasing to discover that this splendid little butterfly with its interesting regional forms is relatively easy to rear. Hopefully experience gained by such off-site breeding may encourage (with the co-operation of and consultation with the necessary organisations and authorities) the establishment and re-establishment of colonies in suitable areas.

PURPLE AND WHITE-LETTER HAIRSTREAKS ON ELM

Observations made 19 July - 2 August 1986

by Mark A. Hope (8139)

I was interested to read in last November's *Bulletin* (Vol. 45:248) Mr Locke's note on his colony of Purple hairstreaks (*Quercus quercus*).

While on holiday in Suffolk during July/August last, I was directed by friends to a colony of White-letter hairstreaks (*Strymonidia w-album*) on an old (and dying) English elm. The colony was a large one and I would estimate that there must have been at least sixty butterflies on the tree.

Using my net on the end of a fifteen-foot pole, I caught and released more than two dozen butterflies and was surprised to find that among that number there were three purple hairstreaks. The nearest oaks were about a hundred yards or so away, yet in spite of beating the branches of these and scanning the tree canopies with binoculars, no Purple hairstreaks were to be found on them.

I can only assume that the large numbers of White-letter hairstreaks on the isolated large elm must have acted as a magnet to the odd Purple hairstreak hatching on the neighbouring oaks. The three *quercus* I caught were males and I formed the theory that they must have been attracted purely by sight to the large numbers of White-letter hairstreaks in the hope of a mating — clearly a case of mistaken identity on their part!

Latterly I did catch a female Purple hairstreak on the elm tree and can only imagine that it too had been lured by the large number of butterflies on this single tree. At no time did I see any of this species on the oaks — though clearly they must have come from there originally and would, no doubt, in due course, return to lay eggs.

I spent three weeks in the area (19 July - 8 August) and in spite of repeated visits to the site, I saw no Purple hairstreaks on the oaks.

The elm tree on which both species of hairstreaks settled was afflicted by Dutch elm disease but we were pleased to note that some White-letter hairstreaks were also to be found (albeit in small numbers) on one or two young, healthy elm saplings in the immediate vicinity. No Purple hairstreaks were seen on these, and, indeed, the only *Quercus* seen in the area were on the big elm which held the bulk of the White-letter hairstreak colony.

In this instance, I cannot believe that the Purple hairstreaks had been attracted there solely to feed on honeydew, for there were many other sources available to them and the only conclusion which seems to fit the circumstances was that they had been drawn there initially by the presence of a large number of butterflies which at relatively long-range were mistaken by them for members of their own species. Once drawn, however, the *quercus* remained there (at least during the course of my visits) to engage in courtship and mating.

OBSERVATIONS ON BREEDING THE SPURGE HAWKMOTH

by D. W. Joy (8323)

I have been successfully breeding the Spurge hawkmoth (*Hyles euphorbiae*) for the past two years and the methods I employ are set out below.

About mid-April I transfer pupae to a small cage in my bedroom and place them on about two inches of moist peat. If pupae are not coloured up in about four weeks, I put a sprinkle of moist peat of top of the old peat and gently place the pupae on top as the peat dries out. It is best to have about a dozen pupae as they tend to hatch at different times. When moths have hatched, just before dusk the window is left open about two or three feet and I swing the bedroom door to and fro about ten times to get the air moving. Last year four females hatched and one male; one female having crippled wings. They were all in a cage two feet high by one foot wide. I went to bed at eleven pm and the male had paired then with a female. The male paired with the crippled female three nights later about midnight. Moths do not have to be fed before pairing; after pairing I feed them about every two nights. Hand feeding about ten per cent honey stirred in warm water. Sometimes I put the moths on a table and push the honey near and gently uncurl the proboscis; occasionally the moth will feed without flying away. The males are fed after pairing like the females. In very hot weather moths usually live two weeks — in cool weather I have kept a moth for six weeks. Ova are laid one or two nights after pairing then again after feeding. About fourteen ova are usually laid first. Larval food plant does not have to be present.

The crippled moth laid well, beating her wings running up the netting. Hatching occurs after about one week. The ova turns black just before larval hatch. Newly hatched larvae do very well on cyprus and sun spurge. A good combination is to use sun spurge to the third instar, then use a caper spurge; newly hatched larvae usually perish on this. Older larvae prefer cut food as the living plant seems too rich. Petty spurge causes diarrhoea in young larvae. I have used petty spurge on older larvae without ill effect, if kept no longer than two days on it. About the fourth instar I sleeve on cyprus or feed on cut caper spurge. I find larvae grow very quickly if put into cardboard boxes. Cut a caper spurge, cover the top with netting and put in the greenhouse in full sun. Without sunlight the chances of rearing are greatly reduced. Some pupae I obtained from a dealer and some from Malta. The larvae from the dealer when fully grown were black, whereas the ones I got from Malta were green. At pupation time I use living moss or dry tissue paper. I tried peat and sand both mixed dry and moist, but found the pupae deformed. Next year I will try to mix the different pupae — it will be interesting to see the colour forms of the larvae.



Caterpillar of Spurge hawkmoth (Photo by Leigh Plester).

STAG BEETLE SIGHTINGS

by Frank Marples (8226)

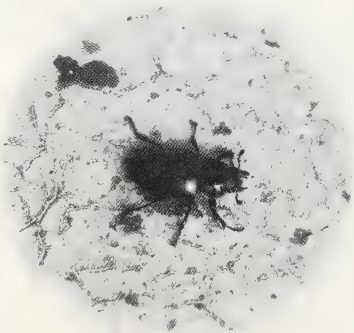
My first sighting of a stag beetle occurred twenty-five years ago, at a quiet Hampshire roadside. As a child, making those wonderful "first discoveries" in life, I was greatly impressed by its size and by its aura of antiquity and magnificence!

Referring to a text book I learned that the scarabaeiform larvae of *Lucanus cervus* may spend up to three years feeding upon wood, in old logs, etc, while the adults may take no solid foods and live for just a number of weeks, and that only the males have the antler-like jaws.

The stag beetle may not have been the Sacred Scarab of Ancient Egypt, despite its "aura", but it will always occupy a special place in my catalogue of childhood memories!

I have sighted a few living and dead specimens recently, here in the greater Portsmouth area, but the species has doubtless declined in England during the last quarter of a century.





THE INSECTS OF THE MONTGOMERY CANAL

by J. A. Hollier, R. J. Wistow and A. Walmsley

The Montgomery Canal is 57 km of Remainder Waterway (as defined in the 1968 Transport Act), managed by the British Waterways Board, running from Frankton in Shropshire to Newtown in Powys, as a branch of the Shropshire Union system. The canal falls into three sections; the northern (Shropshire) section with its isolated stretch of Rednal Moss fed water and dry sections, and the two southern (Welsh) sections fed by Tanat and Severn water. The history of the canal is discussed by Denton (1984), which includes a chapter on the natural history (Paskell 1984). Hopkins and Brassley provide a general introduction to canal wildlife.

A survey of the canal's flora and fauna was carried out by an MSC funded team in 1985 and 1986 for BWB, recording about 450 species of invertebrates. A number of rarities were collected (see Hollier 1986, Hollier *in press*, Hollier and Wistow 1986, Wistow *in prep.*) but many of these were not directly related to the canal environment. The importance of the canal lies in the scarce and local insects abundant in the communities associated with the aquatic habitats provided by the canal rather than isolated records of rare species.

The canal proper is slow flowing, of relatively even depth with a muddy bottom and narrow fringe of diverse emergent vegetation. In the less intensively managed sections the emergent fringe is larger and in some places the whole canal is covered by dense reedswamp dominated by *Glyceria*. In general the distribution of species on the canal were not related to the water source; the management and its effects on the amount of open water were the most important factor. The exception was in the isolated northern section where the base rich water supported three water beetles; *Noterus crassicornis* (Muller), *Ilybus guttiger* (Gyllenhal) and *Rhantus exsoletus* (Forster) which are typical of relict fens and have a very localised distribution. The uniformity of flow and substrate meant that some species were common throughout the length of the canal, the bugs *Notonecta glauca* L., and *Sigara fallenii* (Feiber) and beetles *Haliphys lineolatus* Mannerheim and *H. wehnckei* Gerhardt were found in 80% of the sampling sites. The most widespread species with aquatic larvae were Alder fly *Sialis lutaria* (L.), the Mayfly *Chleone dipterum* (L.) and the Caddisfly *Arthropisodes aterrimus* Stephens). The Damselflies were also important. *Coenagrion puella* (L.), *Ischnura elegans* (Vander Linden) and *Enallagma cyathigerum* (Charpentier) were very abundant in June and July. The larger Dragonflies came later in the year, and *Aeshna grandis* (L.), *A. cyanea* (Muller) and *Sympetrum striolatum* (Charpentier) were the most common. Of the scarcer species recorded *Erythromma najas* (Hansmann) and *Platynemis pennipes* (Pallas) are known to breed on the canal but *Gomphus vulgatissimus* (L.)

and *Libellula depressa* L. are likely to have been vagrants from the adjacent rivers Vyrnwy and Severn.

The larger *Limnephilus* caddis were only found on the northern and Tanat section; this may be another effect of water quality although the data shows no obvious differences between Tanat and Severn waters. Freshwater sponges were common, especially on bridges and quays, and the Spongfly *Sisyra fuscata* (Fabricius) was widespread. China mark moths were also widespread and locally abundant.

A number of species with aquatic larvae which are normally associated with faster flowing waters were found near the river feeders or lock overflow weirs. The Mayflies were particularly well represented in this group, with the striking *Ephemera danica* (Muller) and *Ephemerella Ignita* (Poda) amongst the species recorded.

The emergent vegetation and denser reedswamp had a very large Diptera fauna, of which the Hoverflies were the most conspicuous. The scarce *Anasimyia transfuga* (L.) and local *A. lineata* (Fabricius) and *Eristalis intricarius* (L.) were associated with the more diverse emergent vegetation, as were the commoner *Chrysogaster hirtella* (Loew) and *Neoascia geniculata* (Meigen). Species which prefer shallow water included *Helophilus pendulus* (L.) and the local *H. hybridus* (Loew). Many of the other species of *Eristalis* were associated with rich marshes and organic mud, as were *Eristalinus sepulchralis* (L.), *Chrysogaster solstitialis* (Fallen), *Orthonerva splendens* (Meigen), *Neoascia tenur* (Harris) and the more local *N. obliqua* Coe. The distribution of these species on the canal follows the habitat preferences suggested by Stubbs and Falk (1983), but many of the species which they consider scarce or local are abundant.

The Dolichopodidae and Empidae were very abundant; *Hilara maura* (Fabricius) and *H. quadrivittata* Meigen forming large swarms early in the year while *Dolichopus unguatus* L. and *Hercostomus cupreus* Fallen reached peak abundance in July. A number of scarce species were recorded (see *Procs BENHS*) some of which were abundant on the canal. The Tabanidae were also well represented, *Haematopota pluvialis* (L.), *H. crassicornis* Wahlberg and *Chrysops caecutiens* (L.) were particularly common. Most of these flies were associated with the denser reedswamp and organic mud.

The emergent vegetation supports a number of very abundant, and brightly coloured, herbivores; the Chrysomelid beetles *Donacia simplex* Fabricius, *Plateumaris serica* L. and *Alticia lythri* Aube, and the bugs *Chilacis typhae* (Perris), *Ischnodemus sabuleti* (Fallen), *Dicyphus epilobii* Reuter and *Cymus glandicolor* Hahn. Other species recorded from reed-swamp areas included the leafhopper *Cicadella viridis* L., and the plant hoppers *Struebingianella lugubrina* (Boheman) (associated with *Glyceria*), and *Stenocranus longipennis* (Curtis) a species of very local distribution.

The terrestrial insect fauna of the Montgomery Canal is very similar to that of the Kennet and Avon Canal (cf Gibbs and Cousins 1985), having many of the same scarce species as well as the common ones. The Kennet and Avon Canal is similar to the Montgomery in that it is not fully restored and boating levels are low. Work on the heavily boated Llangollen Canal produced very different results, with richness and diversity being lower than on the Montgomery. The most obvious reason for this is that the Llangollen Canal has much less shallow water and emergent vegetation, and so does not provide habitats suitable for many of the species recorded on the Montgomery.

We are grateful to M. Wilson, G. N. Foster, J. H. Blackburn and I. D. Wallace for checking identifications and providing information about status. Thanks are due to British Waterways Board and Manpower Services Commission for permission to use these data.

REFERENCES

- DENTON, J. H. (1984) *Montgomery Canal and Llanymynech branch of the Ellesmere Canal*, Lapal, Birmingham.
- GIBBS and COUSINS (1985) *The Canal's Insects*. Unpublished Report of MSC Kennet Avon Canal project for BWB.
- HOLLIER, J. A. (1986) Hymenoptera, Aculeata from the Montgomery Canal, including a species new to Wales. *Entomologists' Gaz.* 37:196-197.
- HOLLIER, J. A. (1987) *Idiocerus herrichi* (Hom.-Auch.) in Wales. *Ent. Monthly Mag.* IN PRESS.
- HOLLIER, J. A. and WISTOW, R. J. (1986) Insects and Conservation of the Montgomery Canal. In 1986 Annual Exhibition Report. *Proc. Trans. Br. Ent. Nat. Hist. Soc.* 20:64.
- HOPKINS and BRASSLEY (1982) *Wildlife of Rivers and Canals*. Moorland Publishing, Ashbourne.
- STUBBS, A. E. and FALK, S. J. (1983) *Hoverflies*. BENHS, London.
- WISTOW, R. J. IN PREP. The Odonata on the Montgomery Canal.

PAIRING NOTES ON THE PHILIPPINE GIANT MOTH

Attacus atlas lorquinii

by Joe Church (7190)

It has often been said that the giant atlas moths are difficult species to breed. However, in my experience I would rather say that they are just rather unpredictable. I have tried on a couple of occasions and by trial and error I seem to have brought together a combination of environmental conditions in which these giant moths are happy to breed. I hope that some of my discoveries are new to some members who might then have better success in the future.

On the first occasion that I attempted breeding these moths I had about 20 cocoons bought at the AES Exhibition. The first problem that I

encountered was simply that I could not get a male and female moth to emerge within the same period of time. Out of the 20 I had half a dozen moths around before a member of the opposite sex was available. I also quickly discovered that the females refused to move at all unless disturbed and so it was up to the male to "arrange" the mating.

The second problem was providing a flight area for the males. I had heard that the larger the area the better the chances were and if possible one should allow the moths the freedom of a room. I tried this out but it was unsatisfactory. The males always found somewhere to get trapped, however hard I tried to seal off potential area of danger. Another problem was retaining humidity in the room, which proved to be virtually impossible. Finally I resorted to trying to hand-pair a couple. I was finally rewarded by a coupling, but due to my own carelessness, a failure insofar as pairing was concerned. I had left the moths hanging on some netting close to the window of the room and the mid-January weather ensured that the moths were too cold to gain the energy for successful copulation.

With my last pair of moths I used a standard wood framed net cage which was about three feet square. By heating the room to 80°F a successful pairing was obtained. The desert-like dry conditions resulting did not seem to have any effect of these tropical moths used to between 90-100% RH!

The larvae were successfully reared on privet which is, in my experience, the only suitable winter foodplant. Buddleia and Rhododendron which I also tried both gave disastrous effects. The silk produced by the privet-reared larvae was paler in colour than their parents' and several of the cocoons were thinner and weaker than they should have been. This had happened to me before when I had no option but to use privet as a foodplant. There is no doubt that the larvae benefit from a varied diet and the eating of woody stems, especially in their fourth and fifth instars. I can only put this down to certain nutrients that produce a stronger silk. Unfortunately it is not possible to offer a varied diet during the winter months. However, in spite of the poor cocoons no detrimental effects occurred in the resulting adults which were all prize sized exemplars. Another possibility for the paleness of the cocoons is the humidity experienced while they are being spun. I noticed that where a larva had spun in a dryer place the cocoon was invariably pale but that in humid conditions very dark cocoons were spun.

I had to make sure I did not overcrowd the larvae, especially in the final instar. If left without food for any length of time they exhibited cannibalistic tendencies.

I next received about sixty cocoons of the same *lorquini* subspecies and since my earlier experiences I was well prepared. I had built a heated unit of about 4 × 4 × 3 feet in which I hung the cocoons, spraying them two

or three times a day and having a wet towel hung up in the cage directly above a tubular heater. In no time at all the pupae had reacted to their simulated monsoon rain and a couple of males emerged on Christmas eve, closely followed by a couple of females on Boxing day.

I had planned to build a huge flight cage about six or eight foot square, but the fast-emerging moths had taken me by surprise. I therefore put them in a hanging cylindrical net cage (about three feet high by two feet in diameter) placed within the already made heated larger rectangular cage. By 11.00 o'clock there was a pair which remained attached together for 24 hours, the female clinging to the top of the cage where I had placed her and the male hanging from her abdomen.

The following night the other pair mated and cocoons were hatching fairly evenly at the rate of one to three per night, always between 20.00 hours and the early hours of the morning. This went on for three weeks during which time eight to ten pairings were achieved. All proved to be fertile and all took place in the small cylindrical cage.

The conditions under which the moths mated were varied although I generally kept them at about 80°F during the day with a few degrees' drop at night. Humidity was around 75%RH when I had just sprayed the cocoons, but during the night it would drop to between 35-55%RH and pairings were still taking place.

I also made sure that there was some form of ventilation so that the air was circulating in order that the male could pick up the pheromones emitted by the female, said to be undetectable in a still atmosphere. However, as usual with this species, there were exceptions: mating did take place when I had forgotten to provide the ventilation!

The presence of several individuals in the cage at the same time proved to be an added stimulus. There was much more likelihood that a pairing would occur when there were half a dozen moths in the cage than if there was just a couple present. Quiet conditions are also essential, at least in my experience. The moths are best left alone to their own devices once dusk has fallen.

I wish anyone who tries the same species the best of luck. I have certainly gained an immense deal of pleasure from these truly magnificent lepidopterans.

BERNWOOD FOREST RECORDS WANTED

BUTTERFLY RECORDS — I am searching for old and current records of butterfly species from the Bernwood Forest complex; comprising Hell Coppice, Shabbington Wood, Oakley Wood and Yorks Wood in Buckinghamshire and Waterperry Wood in Oxfordshire. I would be

grateful for any records, including those of the common species, from this site. I would also be pleased to hear of the whereabouts of additional sources of information concerning the butterflies of this site. Confidentiality will be maintained if wished.

Reply to — Dr T. G. Shreeve, Department of Biology, Oxford Polytechnic, Headington, Oxford OX3 0BP.

THE NEW FOREST INVERTEBRATE SURVEY

Request for records

The Invertebrate survey of the New Forest is a scheme being carried out under the auspices of the Nature Conservancy Council and anybody who collects or observes in the area, or has any records, is requested to send them to one of the recorders listed below.

ANTS	Mr K. H. Halstead, "Mistletoe Cottage", Masseys Lane, East Boldre, Brockenhurst, Hants.
ARACHNIDA	Mr I. R. Hudson, 12 North Close, Alverstoke, Gosport, Hants PO12 2PH.
BUTTERFLIES	Rev. S. C. Pittis, St Pauls Vicarage, Pembroke Road, Woking, Surrey GU22 7ED.
COLEOPTERA	Mr D. M. Appleton, 86 Southampton Road, Park Gate, Southampton, Hants SO3 7AF.
DIPTERA	Mr I. Perry, 27 Hill Road, Lode, Cambridge, Cambs CB5 9EM.
HETEROPTERA	Mr D. M. Appleton, 86 Southampton Road, Park Gate, Southampton, Hants SO3 7AF.
HYMENOPTERA	Mr G. Else, 6 Greenhill Close, Winchester, Hants SO22 5DE.
MACROLEPIDOPTERA	Mr E. H. Wild, 7 Abbots Close, Highcliffe, Christchurch, Dorset BH23 5BH.
MICROLEPIDOPTERA	Col. D. H. Sterling, "Tangmere", 2 Hampton Lane, Winchester, Hants SO22 5LF.
ODONATA	Mr and Mrs A. R. Welstead, 3 Kelvin Close, Hythe, Southampton, Hants SO4 5LW.
ORTHOPTERA	Dr A. J. Pontin, Dept. of Zoology, Alderhurst, Bakeham Lane, Englefield Green, Surrey TW20 9TY.
OTHER ORDERS	Mr S. R. Davey, HCMS Chilcome House, Chilcome Lane, Bar End, Winchester, Hants.

THE LONDON ECOLOGY CENTRE

The London Ecology Centre was established in 1985 by the former Greater London Council in order to act as a focus for ecological activities and to promote public awareness of London's natural environment.

The centre is situated at 45 Sheldon Street, Covent Garden, London WC2H 9HJ and is open Monday to Saturday from 10 am to 6 pm. Except for certain events admission to the centre is free. Goods, books and services of interest to naturalists are on sale and there is an excellent coffee shop which is open all day until 5 pm. An ongoing programme of events and exhibitions takes place and in addition the centre acts as an information exchange, for it works in close association with many other organisations and bodies concerned with wildlife and conservation. Rooms are also available for hire ranging from a small illustrated talk to a full conference or press launch.

Members wishing for further information should contact the centre either by writing and enclosing a stamped addressed envelope, or phoning them on (01) 379 4324.

UNUSUAL OCCURRENCE OF LARGE WHITE

*Larvae of *Pieris brassicae* in winter*

by J. W. Lavery (7469)

On January 3 this year I discovered five larvae of the Large white actively feeding on brussels sprouts in a garden in Tralee, Co. Kerry. I removed the larvae and placed them in a small breeding cage along with their foodplant. Almost immediately they gave up eating and moved to the top of the cage where all five had pupated by January 11.

In conclusion the following points may be of interest. Until January 3 we had been enjoying a very mild winter. This had been preceded by a warm dry spell during September and October 1986 and during this time there was a large influx of *brassicae* in this area. Finally, this is the first occasion on which I have obtained 100% pupation from wild stock which may perhaps be due to the late (out of season) occurrence of these larvae when it is possible that no predation from parasites takes place at such a time of year.

THE LUNAR UNDERWING MOTH IN STAFFORDSHIRE

by Jan Koryszko (6089)

On October 1st 1986, while looking in a shop window I noticed a moth which was roosting outside in the corner of the window frame, so I put it in a container, which I always carry with me. When I got it home I could see it was a Lunar underwing moth (*Omphaloscelis lunosa*).

This is the first record for the Meir area where I live. I sent this uncommon Staffordshire species to the county Lepidoptera recorder, Mr R. G. Warren, who informed me that it has only occasionally been taken by operators of moth traps. He said he had a recent record from

Caverswall, which is not far from the Meir area, and he has had it in his moth trap at Trentham. He now has my specimen in his collection; because it is a typical one, not the dark form which is most frequent in Staffordshire. I have been told by another entomologist that quite a few of these moths have been recorded in other parts during 1986 and in the *Lepidoptera atlas of Staffordshire*, it has been recorded from Madeley, one worn example, 1926, by the late H. W. Daltry. Also records from Forton, Coombes Valley, 1971, and Cannock Chase, Blythe Bridge Mill, Stone, and Tamworth and Burton areas. It appears to be increasing and spreading from the south-east, but still rare in the west of Staffordshire at the present time.

HUMMINGBIRD HAWK AND OAK EGGAR IN WOLVERHAMPTON

by Guy T. Knight (8040J)

On 2nd July, 1986, we had a Hummingbird hawkmoth (*Macroglossum stellatarum*) in our garden. It was sighted at 7 pm flying near our garage and woodpile. It rested briefly on goosegrass.

We told Godfrey Blunt, the South Staffs Nature Conservation Trust Insect Recorder, and he said it was the first recording for Wolverhampton. He has since told us that another was seen on the afternoon of the same day.

In June I was given a caterpillar which had been found on heathland. I identified it as an Oak eggar and fed it on bramble. It pupated in late June and a female emerged on 21st July which led me to believe it was *Lasiocampa quercus quercus*. I kept the female indoors intending to return her to the place where the larva had been found. To my great surprise on 24th July at 2 pm I netted a male Oak eggar in our garden. We live approximately one mile from the centre of Wolverhampton.

As the moth is not found locally I can only think the male had travelled some distance to locate our female.

No 'conventional' pairing was observed, although a careful watch was kept. At one stage the male and female were side by side on the netting with one of the male's wings over the female and his abdomen was twisted to rest on hers. This position was held for approximately 15 minutes. The female started laying at 7.30 pm the same evening (24th).

The eggs began to hatch on the 19th August and out of the whole batch only eight were infertile.

Half of the larvae were released on Cannock Chase where our original came from and to date, 15th December, the rest are doing fine in the garden in a tank.

EARLY SPRING RED ADMIRALS

by Gareth King

While in Cornwall, mid-April 1986, I sighted three specimens of the Red admiral (*Vanessa atalanta*) and in view of the articles on this species in *Bulletin* No. 353 feel the sightings deserve to be recorded. The specimens were in mint condition, could have been freshly emerged, and would certainly support Gardiner's contention regarding their having become torpid over the winter rather than diapausing. It would seem that these three butterflies must have been the result of late pupae, or larvae feeding on sheltered nettle beds. It is significant that the area in which they were seen is renowned for its mildness, although the past winter had recorded temperatures of -9°C . However, normally both the Lizard Peninsular and the area around Lands End are mild and damp. The high temperatures in early April would certainly have helped them along and it was significant that the female was flying above a large bed of nettles, presumably about to oviposit.

ULEIOTA PLANATA IN DYFED

by P. M. Pavett (8263)

On the last day of the year in 1985, in the county of Dyfed, whilst looking under the bark of a dead elm tree for beetles, I found a colony of the Cucujid beetle *Uleiota planata*. There were about twelve of them of which I took only a couple. According to Joy in his "British Beetles" this species is very rare and probably always an importation. I cannot see that this could be so in the situation and numbers I found. I would be interested to know if any other members have any knowledge of this beetle.

IN PRAISE OF MERTHYR MAWR

A good place for beetles

by P. M. Pavett (8263)

I was interested to read the articles by Mr Copestake on the beetles of Merthyr Mawr (*Bulletin* 44:347; 45:350). Having read them I felt I must visit the place for myself and it turned out to be everything and more that he declared it to be.

To add to what has already been said concerning this locality, it is interesting to note that some of the species I found on the beach are totally out of their natural habitat. These, no doubt, have been washed up on the beach with the trees, wood and rubbish. On three separate occasions I have found the rhinoceros beetle *Sinendron cylindricum*

under logs on the beach, I have once found the lesser stag beetle *Dorcus parallelepipedus* clambering up a dune. Under a piece of driftwood I found the small Carabid *Nostiophilus rufipes*. All these three species are woodland insects, but here they were on a beach.

As Mr Copestake points out many rare and local species occur here, some quite commonly (confirmed, as for instance, the time I lifted an old board and about twenty *Chlaenius nigricornis* and *C. vestitus* ran from it), and it is certainly a place to be conserved and not to be turned into a golf course. May that day never come!

A CASE OF PARTHENOGENESIS IN A MANTID

by Phil Bragg (8737)

Last year (1986) I bought a young praying mantid (I think it was a *Miomantis* species) and it duly developed into an adult female which laid seven oothacae. At Christmas three young hatched from one of the ootheca but died within a week due to my then ignorance in keeping them too dry. I have not been able to find any record of parthenogenesis in mantids.

A THIRD STICK INSECT ESTABLISHED IN BRITAIN

So important and popular have stick insects become that they recently had an International Symposium all to themselves and this took place in Siena, Italy, held in and sponsored by the University of Siena. Our member Paul Brock, author of *The Phasmid Reared's Handbook* attended and gave a talk, later published in the Symposium proceedings, entitled *A third New Zealand stick insect (Phasmatodea) established in the British Isles, with notes on the other species, including a correction.*

This paper deals with the origin of these New Zealand species established here; places emphasis on their distribution; gives tables and figures to distinguish them.

The newly-recorded breeding species is *Acanthoxyla inernis* Salmon, found first in June 1981 at Falmouth.

As a result of careful research and comparison with the type specimens, Paul has gone on to elucidate how he discovered that the stick insect, formerly identified as *Acanthoxyla prasina* (Westwood) is not in fact that species (which it very closely resembles) but *Acanthoxyla geisovii* (Kaup).

LEPIDOPTERA NOTES FROM SCOTLAND

by Frank McCann (6291)

In late March 1986 I was on holiday at Seamill on the Ayrshire coast, and I discovered various caterpillars in crumpled leaves along the lanes during my walks. One of them fed on soft brome grass, and later took to dandelion; it was slate grey in colour with a white stripe low down on the sides. It produced a small greyish brown moth which I have still to identify. The other caterpillars I released.

Nearer my home in Glasgow, about a mile or two from the house, during April and May, I was finding various caterpillars along the country road verges resting on pieces of crumpled paper. Most of them I fed on dandelion and they produced moths of which the most common was the Lesser yellow underwing.

Another one I found on a piece of paper was a larva of the Plain golden Y, which I fed on nettle, and it produced a fine moth.

While out walking again in the same area, I found some Coxcomb prominent larvae on the hawthorn hedges of East Hallhill Road, which is narrow, and still has hawthorn hedges along both sides. I didn't find any larvae till near the end of the road, where I found a Grey dagger. These are very common on those hedges. Across the road and further on, I found more Coxcomb prominents. The first one I saw was resting on the upper surface of a hawthorn leaf and it seemed to be only in its first instar. It had black dots down along its back and the two raised projections near the end of its body. The other three I found were larger but less than half-grown. I collected four including the first instar one, and fed them mainly on hawthorn, but supplied them also with lime and birch, both trees of which grow near the house and they accept.

They were resting on tall shoots or "sprays" of the hawthorn about halfway up the hedge, and were on the edges of the leaves; only on the underside of the leaves, my eye caught sight of the bright yellowish-green colour of them as they rested on their leaves. I think in this particular locality they come up to feed about dusk. I also found on the same bush as the smaller Coxcomb larvae, four eggs of the species, but did not collect these. They are quite large and I could see two small larvae inside the white shell of two of them which were on the underside of a hawthorn leaf on a shoot of the plant, but because of the angle of the leaves on it, the eggs were facing upwards.

East Hallhill Road is just half-a-mile or so east of the house and it runs for about one mile eastwards to the village of Swinton and the town of Baillestown. The only species to be found at all commonly there are Grey dagger and Coxcomb prominents which I first came across there in late September of 1980 or 1981.

A RARE ABERRATION OF THE RED ADMIRAL

by Robert Young

In August 1982 I was surprised to see a Red Admiral (*Vanessa atalanta* L.) in my garden, here in Macclesfield, which did not appear to have any white markings on its forewings.

Fortunately this butterfly was again observed the following day and I was able to photograph it albeit in a rather amateur way.

Unfortunately I then mislaid the negatives.

Now that I have retired from General Practice and have a little more time to spare, I came across the negative while tidying through my desk!

I have been advised by both Brian Gardiner and Peter Cribb that this is an example of an *atalanta* in which the white band and spots are suffused with black scaling.

It seems to me that this must be an extreme form of aberration known as *umbrosa* Fischer.

I wonder whether this may be the first time that a photograph of this butterfly has been published.



Vanessa atalanta ab umbrosa.

THE MOTH MIMIC BIRDLIME — *GUANO GUANO*

Correction of nomenclature

by Howard Biley (8641)

I was saddened to see an otherwise excellent account of the Moth mimic birdlime marred by an elementary error (C. R. Eastwood, "Not Quite Moths", *Bull. Amat. Ent. Soc.* 46:49-50). The name *Guano vulgaris* is not correct, and the bracketed abbreviation "(East.)" without meaning.

Perhaps I may be permitted to offer some words of explanation. It will have been seen that the specific name "*vulgaris*" Meaning, in a broad sense, "prevalent") was commonly used in times past for many different animals. This arose because there was a period during which it was held to be correct for any animal species to carry any specific name that was the same as the generic name. Thus the name "*vulgaris*" came into frequent use.

However, that view is no longer maintained, and in most instances "*vulgaris*" has become a synonym and the species validly re-named. I suggest that the Moth mimic birdlime should become *Guano guano*. It should then carry the suffix (Eastwood) *in parenthesis*.

I hope that you will not find this note unduly pedantic. If, however, the *Bulletin* is to be widely recognised as a worth-while publication, it is important that slipshod errors are avoided, and I do hope that you will see your way clear to publish this correction.

ICHNEUMON

Beware!

She has it all —

The dainty touch,

Balletic stance,

Lover's clutch,

The architecture of an armoured knight,

She tests the midday air

And rides the rhythms of the night.

And then,

Bestrides her sleeping prize with potions rare,

Ecstatic angel in darker guise.

Take care,

The purpose behind the promise of her brimming eyes,

Behold the hypodermic stare.

Don McNamara

REARING THE PURPLE HAIRSTREAK *QUERCUSIA QUERCUS* L.

Notes and Observations from 1984 breeding programme

by T. A. Hobbs (7569)

INTRODUCTION

During 1984 I observed the whole 'lifecycle', but not the whole 'annual cycle' as ova were not observed throughout their entire stage; therefore methods for hibernating ova are not included. A reference is, however, given below to ova of the second generation in captivity.

Nine ova were received from Mervyn P. Phillips on 23rd March 1984. These were collected from a locality known as 'Drop Lane', Radlett, Herts, approximately two meters from the ground from *Quercus robur* (English oak) on 20th February 1984. Three larvae successfully emerged from these ova.

Three newly-hatched larvae and their empty ova, four unhatched ova and one parasitised ovum — possibly by *Trichogramma* sp. — with wasp exit hole in the side as illustrated in *A Complete Guide to British Butterflies* by Margaret Brooks and Charles Knight, p.14, pl. VI, were received from Graham Best on 15th April. These were collected at Long Ashton, Bristol, very recently beforehand. No more larvae hatched from the remaining ova.

On 1st June the four pupae reared successfully from the six larvae that hatched, were supplemented with five other pupae purchased from Roy E. Stockley. These were slightly ahead in development of the stock reared by me.

All stock, once received was reared in Almondsbury, Avon, 80 metres above mean sea level.

The outhouse referred to in the following notes is a north-west facing wooden building, on which only the matt black roof is exposed to morning sunlight. Therefore the internal air temperatures within the outhouse remain at a tolerable level all year round. As the sun travels from S.W. to W.N.W. it falls on the N.W. facing windows and the S.W. facing wooden side, increasing the internal temperature to a maximum of 35°C. However, this extreme is infrequent and during 1984, occurred between late May and late August — outside of the period when it could affect larvae. The difference between the temperature outside and the temperature inside the outhouse decreases as the natural temperature becomes less, therefore, when the external climate has a temperature of 5°C, the internal temperature of the outhouse may only be 1°C above this. However, if the natural temperature outside approaches 20°C, the internal temperature of the outhouse may be 15 + °C greater.

The humidity of the outhouse is that of the natural external humidity.

METHODS

1. OVUM

Ova were received on dead twigs on the 23rd March, and loose on the 15th April. Initially all but a few of the ova that were received on twigs were left as such; however the twigs were cut down to 5 mm lengths and placed into a transparent plastic container (75 x 45 x 20 mm, length, width, depth respectively) whose base was lined with a semi-absorbent material. The amount of matter present in the container was cut down as much as possible so that any larva ensuing from an ovum could be seen immediately. Loose ova were also placed in the container. After a day or two delay when ova were kept within their container in an outhouse, all were placed into a lower fridge compartment at 2° to 5°C. This was done with the intention of retarding larval development until such a time as would allow me to be constantly present to transfer larvae, on hatching, to the appropriate cage. When removed from the fridge into room temperature, larvae began emerging within a brief period from 24 hours onwards. Emergence of larvae, with one exception was exactly synchronised with their wild counterparts.

In the latter days of the ovum stage, the semi-absorbent tracing paper type liner used in the container base was substituted for a more absorbent tissue liner (Kleenex type tissue). This was the main suspected cause for the high mortality rate in the ova.

Over the course of a month, the container's liner was moistened, replaced dry, remoistened etc in an effort to reproduce a climate that would be found in a natural environment. With these methods of control, humidity and the problems associated with its extremes ran erratic, e.g., mildew or the possibility of desiccation. It is important to beware of such materials that may be used for lining container bases, that have, or may have, bacteriacides/fungicides impregnated into them, such as the tissue liner referred to above. Such chemicals killed the contents of ova suddenly and quickly, even while larvae were chewing their exit holes.

2. LARVA

The cage used throughout the larval lifespan was a small cylinder cage constructed as follows:

- (a) Rustproof metal base — diameter 130 mm, height 35 mm.
- (b) Transparent perspex roll — height 200 mm, to fit base.
- (c) Rustproof metal lid with netted vent — vent diameter 35 mm, lid depth 115 mm.

Total assembly height: 230 mm.

The cage was situated in dense shade within the outhouse. Larvae were fed from *Q robur* cut from mature local trees. This was stood in a jar of chemical plant feed solution with a bung at the neck of the jar. The foodplant should be renewed twice a week although once a week will do little harm now and then. Renewing foodplant regularly becomes more important during latter instars if a high standard of hygiene is to be maintained.

Oak lasts extremely well in plant-feed solution or tap water, its only drawback being that, under the conditions it was subject to, it continued growing little or not at all once detached from the parent tree. The foodplant should be checked for the abundant sawfly larvae etc before introducing it to captive stock.

For smaller larvae, while the buds of the foodplant were compact, several short twigs, which were small enough to fill the cage without touching the lid or the perspex roll, sufficed for the six larvae. Once the leaves were fully expanded, and the four remaining larvae fully grown, two or three terminal shoots, once the damaged and smaller leaves were removed, yielded sufficient for the larval appetites, but did not obstruct vision. All larvae emerged from their ova while buds were still compact, so therefore, with a fine pair of hooked forceps, the outer scales of the larger terminal buds on the twigs supplied were peeled away and disposed of, revealing live, green bud scales which the larvae readily accepted. While small, larvae could be moved with a large blunt sewing needle. When larger, they can safely be transported with a pair of forceps. Temperatures larvae were subject to varied from normal (during night-time hours) to 25°C + (during afternoon).

Much care must be taken with the prevention of virus/bacterial infection in the close artificial environment within the cage. An absorbent material was used to line the cage base, facilitating the removal of frass. This liner was at first changed with the foodplant, but during latter instars, it was necessary to renew the liner every 24 hours. Condensation was not a problem, even in the unnaturally high temperatures. This was probably a combined effect of the vent in the cage lid combined with the use of an absorbent liner, and the fact that they were densely shaded. It was also a fact that the water and jar present in the cage always remained cooler than the micro climate around them. Therefore much of the excess water vapour condensed on the jar. Once there, larvae never came into contact with it, and it could be removed when necessary.

During the early second instar, a sleeve cage of fine black net, with two supporting rims was experimented with for a short period of time.

Height — between rims — 120 mm.

Diameter — 120 mm.

The sleeve was secured over several twigs of oak bearing small clumps of expanding leaves. The twigs were stood in a bunged jar of plant feed solution. The larvae in the cage were then exposed to natural shaded temperatures with little protection from precipitation, very limited sunlight in a heavy draught. The strength of the draught was at first under-estimated. This cage, under the conditions described, proved unhygienic with regard to frass and the effect moisture has on it. Transpiration of foodplant and larvae increased, the latter of which tended to be unable to replace their moisture rapidly enough, and therefore tended to shrink rather than grow. This was probably due to the draught.

Clear plastic containers (75 x 45 x 20 mm) with no liner in the base are satisfactory for short periods under similar conditions as the perspex cylinder cage, for close observation when necessary. They were used successfully for larvae preparing for pupation and to observe moulting procedures.

3. PUPA

Allowed to form up, two per 75 x 45 x 20 mm transparent plastic container, with a leaf of oak per pair, in indoor temperatures (averaging 20°C). Once formed up and hardened, they were kept in a shaded position within an outhouse for a few days before placing into an emerging cage in preparation for the emergence of the imagines. This was a plastic pot (100 mm diameter, 70 mm high) packed with moist peat. Over this a fine black net sleeve, kept cylindrical by two plastic rims, was secured. Sleeve size: 120 mm, between upper and lower rim, 120 mm in diameter. A dowel pushed vertically into the peat kept the sleeve at full height and prevented it from collapsing. Care was given to ensuring that imagines could easily gain access to the sleeve sides on emergence, i.e. the peat must fill the pot to the brim, so preventing that from forming a potential barrier. Also the pot rim should contact the sleeve's vertical surfaces. Beneath the pot of peat a dish of water prevented entry of unwanted creatures and kept the peat moist. A moist microclimate within the sleeve was a precaution against cripples which may have been created by the excessive temperatures/low humidities within the outhouse.

4. IMAGO

Allowed to hatch from their pupae in the emerging cage. Due to receiving a batch of pupae which was not quite synchronised with stock reared by me from ova, an imago (female) emerged at least a week ahead of any other individual that was due to emerge. She was successfully kept in good condition until needed by sleeving on a stunted *Q. robur* seedling with a close fitting fine net black sleeve. Two white cotton wool pads were placed on the top surface of the sleeve, all of which was kept in an

almost sunless position, in cool outdoor temperatures. The pads of sugar solution were treated as described below. Once the remaining imagines began emerging, a breeding cage was used until they died.

The breeding cage was a large fine black net cylinder cage with two rims, a thin but substantial wooden base and a zip closure along the height of the cage. Cage diameter 460 mm, Height 640 mm. The cage was prevented from collapsing by a cane tripod and three stout hooks suspended on cords from the tripod apex. These hooks clipped onto the upper rim of the cage. Within the cage the imagines were supplied with five potted oak plants standing between 250 and 350 mm in height. Imagines were fed from cotton wool pads soaked in 5% soft brown sugar solution. As imagines became weaker towards the ends of their lives, the sugar solution was increased to 10% with no effect.

The sugar solution pads were arranged around the sunward perimeter of the cage's top surface. Each day they were either:

- (a) topped up with more solution. This is not advisable over long periods of time as eventually the solution will concentrate to intolerable levels.
- (b) Soaked in tap water to remove stale solution, before resoaking in fresh solution.
- (c) Replaced, fresh pads and solution.

A solution cannot be stored under natural temperatures as it sours after little more than 24 hours. However a slightly foul solution does no noticeable harm to the imagines. The cage was situated in daylong direct sunlight on a lawn.

A small experiment was carried out to encourage imagines to oviposit on the foodplant supplied, as ova were being laid exclusively on the net of the cage. The imagines were closely sleeved, three to a small potted oak with no positive results (see 'observations' for further information). Imagines were shortly returned to the breeding cage.

Ova were collected at regular intervals so that congestion did not occur. In order to do so the imagines were removed from the cage by gently trapping them inside small clear plastic containers before being exposed to total darkness to keep them relatively calm. When collecting ova, it was convenient to turn the cage partially inside out so that ova were on the outside surface of the cage. Ova are firmly fixed to their surfaces, however they can be prised off by soaking them, and their immediate surroundings in tap water for 30 seconds, before pushing them gently with the 'side' of the tip of a large blunt needle.

5. FOODPLANT

For feeding larvae, this was cut as needed from local mature Oak trees.

The five potted oaks available for use were taken locally from the wild in 1983. These were potted into 100 x 100 mm plastic pots in which they were established for use in 1984. The plants have been allowed to grow naturally apart from a 'forced' second lot of growth during 1984 induced by excessive feeding.

OBSERVATIONS

1. TIME CYCLE

Intentions were to allow larvae to hatch from ova between 14th and 30th April. They were placed into a lower fridge compartment on the 26th March and removed on the 9th April. A larva hatched on the 11th April therefore the remaining ova were replaced into the fridge until the 13th April.

- (a) Emergence of larvae from ova: 11 - 15th April. No emergence pattern related to time of day was observed.
- (b) Instars of larvae to nearest day:
 - 1st instar: 11th April - 23rd April
 - 2nd instar: 24th April - 30th April.
 - 3rd instar: 30th April - 9th May.
 - 4th instar: 10th May - 24th May.
- (c) Duration of instars to nearest day:
 - 1st instar: 8 - 12 days.
 - 2nd instar: 6 days.
 - 3rd instar: 9 days.
 - 4th instar: 14 days.
 - 43 days from ova to pupa.
- (d) Duration of pupal stage (taken from stock OBSERVED from OVA only):
 - Pupa formed up: 24th and 25th May.
 - Emergence of imagines from pupae:
 - 18th June (male), during night/early morning.
 - 19th June (two female, one male), hour of emergence not recorded.
- (e) Emergence of imagines from pupae: (taken from stock received as pupae only).
 - Female — 4th June, during night/early morning.
 - Female — 11th June, hour of emergence not recorded.
 - Female — 12th June, hour of emergence not recorded.
 - Female and male — 17th June, during night/early morning.
- (f) Average duration of imagines' lifespan: 26 days.

- (g) Maximum possible time lapse between pairing and first ova observed; 17th to 26th June. (Nine days.)
- (h) Duration of ovipositing activities: (taken collectively from all stock) 26th June - 4th July.
- (i) Imagines as good as dead: 14th July.

2. OVA

Ova received from Herts were attached to twigs which had evidently died since being detached from the parent tree. Eight of the nine ova were laid at the bases of larger terminal buds, the other, opposite a lateral bud. Ova from Long Ashton had been removed from their buds prior to receiving.

Larvae leave their ova intact on emergence, leaving only an exithole based on the micropyle.

Mortality was unsatisfactorily high. There may have been varied reasons, for possible causes, refer to 'Methods' and 'Conclusions'.

3. LARVAE

When newly hatched, the larvae initially placed onto the foodplant would apparently not settle. It was doubted that the larva was capable of boring into the compact bud scales in order to reach green matter and feed. Therefore the outer scales were removed, revealing live material. The larva then settled. Subsequently, all larvae to hatch thereafter were placed onto buds treated as such, one larva per bud. Small larvae on terminal buds are not distinct and quite often difficult to detect. Larvae will wander increasingly from bud to bud and will spin a silken lifeline if they fall in very early stages.

First instar: Larvae bore into compact buds to feed. They will wander from food-source to food-source. Undoubted preference is shown for buds lacking the dead outer scales. Moulting takes place head downwards on buds. Insubstantial silk frameworks may be spun between the occupied terminal and directly adjacent buds in preparation for the moult. As typical, before all moults, all activity ceases. Any silk structures are discarded after the moult. Maximum recorded period between initial observed moult preparations and the moult was 24 hours.

Second instar: Larvae observed to feed two or three to a bud. As a larva bores deeper into a bud, it may on occasion chew through the stem of the growing point within, which will in turn, release a large droplet of fluid. This has little effect on the larvae as they apparently avoid it, without necessarily moving from the affected bud.

Preparations for the second moult take place on a silk pad. The pad is otherwise invisible unless pulled up when a larva is removed from it. If

left undisturbed, larvae would have completed their moults on twigs or buds, which were by then bursting and expanding. However, larvae were removed from their original positions during the inactive stage prior to the moult and placed into a small sleeve cage on cut twigs of *Q. robur* — refer to 'Methods'. It was thought that the larvae were large enough to be less prone to being affected by the climate, and therefore would fare better under more natural conditions. This was not the case. Maximum time recorded between initial preparations for the moult and the third instar was 48 hours.

Third instar: Larvae suffer no certain effects from being detached while in preparation for a moult, although once detached from their silk pads, the larvae will be unable to grip surfaces until the following instar. Larvae begin chewing from the edge of the young expanding leaves.

In the cooler outside temperature larvae were exposed to, activity decreased, the transpiration rate of the foodplant increased. This rapid moisture loss was also noticed in the larvae. The combined effects of even slight precipitation, with frass, made an unwelcome environment. Compared with the draughtless, reasonably humid, relatively hygienic conditions the rigid cylinder perspex cage had to offer under the conditions it was exposed to, the outer sleeve made an unsatisfactory substitute. Larvae were transferred back to the original cage within an outhouse again after four days.

Under conditions within the outhouse, growth is rapid. Larvae rest on or just below bud scales, at the base of young shoots, usually doing so parallel with the twig.

During this instar it was found that the cotton wool bung present in the neck of the jar of solution for the foodplant, could be used only as a 'precaution' against accidents. Larvae tend either to avoid the solution, or to avoid descending any further downwards than is necessary. However it would not be advisable to discard the use of the plug.

Again, prior to the moult, the larvae were removed from their newly-spun silk pads in order to transfer them to fresh foodplant. Again, no harm was observed from doing this, apart from a larva's inability to grasp anything once removed from its pad, until the next instar. Two of the moulting larvae were left undisturbed on their silk pads. The twig each was on was cut down to approximately 20 mm in length and put in a small clear plastic container for close observation. One oak leaf was also placed into the container. All was kept in dense shade in an outhouse.

During the latter part of this instar, larval camouflage becomes even more striking when larvae rest on bud scales, particularly of larger terminal buds.

The preparation time for a moult was 48-72 hours. Moulting, without being hampered, would have taken place on twigs or bud scales.

Fourth instar: Close observation of larvae revealed that the cast larval skins are eaten. This was not observed but no traces of moults were found in the container — refer to moult ending third instar — other than two split head capsules. Whether this was the case with the previous moults is not known. However, only three larval skins have, as yet, been observed. Two of these were unknowingly removed from larvae after a second and third moult. The other disappeared, presumably eaten?

Larvae feed by day and by night — ascertained by recording amounts of frass present in the cage base in early morning and again during the afternoon. Larvae feed from the leaf edge. Larvae will contract when at rest by a good 4 mm on a silk pad spun on a leaf underside, or by drying bud scales.

It is during the latter stages of this instar that hygiene becomes more difficult to control as frass is produced in amazing quantity and humidity is almost excessive as the fully expanded, still fresh leaves of the food-plant transpire rapidly. As the instar progresses larvae out-grow the advantage of effective camouflage (to the human eye) against bud scales. Over the instar, four larvae stripped eight plus large oak leaves, leaving only stumps. At this stage, absorbent liners in the cage base should be renewed per 24 hours, the foodplant can be renewed as necessary, about once a week.

While at rest, a larva will exaggeratedly hump itself up from the mesa/meta thorax to about half way along the length of its body, giving the impression that the last few segments are flattened.

The chance was given during this instar, of comparing larvae reared by me, with other larvae reared in a comparatively cool greenhouse under natural light. These larvae were far more pale than the larvae reared under shade, which have a fairly dense coloration. Could this be due to fading, or something lacking/present in the foodplant? Cut oak was also used for the pale larvae, stood in water.

Feeding and other activities decrease as pupation nears. Much silk is also spun. A 10 mm wide pathway of silk easily reveals the path a larva has taken over the inside surface of the perspex roll: the fact that the larvae wander is unusual in itself, previously larvae did not wander. As the time for pupation drew even nearer, larvae dropped/crawled to the cage floor. Frass did not break down until the last moments, even then it was negligible in quantity. Although the stage was to be reached when feeding would totally cease, larvae would nibble now and again while active. Larvae were of slightly different sizes, it was hoped to predict the sex of the resulting imagines from this, but pupal or larval size did not correspond as expected. The last externally visible preparations for pupation is the contraction of larvae to 13 mm on a silken pad, mainly under supplied oak leaves which were loosely fixed down by silk thread. The larval dorsal stripe will pulse slightly. Larvae were allowed to pupate

in transparent small plastic containers in room temperature — around 15 - 20°C.

Mortality: Two third instar larvae died of similar symptoms. These were recognised a couple of days before death occurred and therefore they were isolated to another cage of the same design — perspex cylinder cage — still in dense shade within an outhouse.

The larvae apparently died from starvation, due to refusal to feed. Dehydration occurred before death. The first incident manifested itself on 3rd May, the larva died on the 4th. The second incident caused death on the 6th May. The second larva was originally undersized, and died hanging head down from its anal claspers only from a leaf underside.

4. PUPAE

There was no noticed pattern with regard to the shedding of the last larval skin. Three of the four larvae shed their skins at around mid-day, the other did so between 10.40 and 10.50 pm. Major preparation for pupation began on average, two days before the pupa was revealed.

Three of the four larvae completed pupation on the base of the container they were in, under an oak leaf loosely fixed down by silk. These larvae pupated with no mishaps, leaving crumpled, easily detachable larval skins, each with a split head capsule. However, the pupa which cast its larval skin while fixed to the container lid, on a silk pad, fell to the container floor — no visible damage was done. None of the larvae spun very much securing silk in preparation for pupation, but this larva spun only a silk pad (possibly due to the lack of other surfaces to which silk could be attached on the smooth flat plastic). Consequently, when a pupa, out of the larval skin, there was no support or grip, so it fell, leaving the larval skin firmly fixed by the prolegs, to the silk pad. It would be suspected that a larva in the wild with a preference to an 'underside' type of pupation site such as bark crevices, would secure the necessary life saving threads as the surfaces needed for doing so would probably be present.

Size variation noted in fully grown larvae, and consequently in pupae does not correspond with the sex of the imagines to emerge.

A very freshly exposed pupa which has just shed its larval skin is elongated and a bright nasty green colour with pale larval markings (the dorsal and oblique stripes etc.) in their corresponding positions on the abdomen. These markings become more distinct as the pupa assumes its typical shape. The distinct 'technicolor' patternation of the pupa at this stage, over hours, fades to less distinct shades, and eventually to its typical pupal coloration.

Once formed up, pupal development can be seen in distinct phases:

(a) Eyes darken.

- (b) Rudimentary wing cases, antennae and proboscis lose their semi-opaque properties and turn an off-yellow colour.
- (c) The whole pupa turns from the dark ginger red to a matt black before the emergence of the imago.

Exact times of such developments were not recorded.

Unexpected behaviour was noted from a pupa received through the post from R. E. Stockley. This pupa was well forward in development, the matt black colouring confirmed this. The imago emerged three days after receiving the pupa. When slightly disturbed the pupa emitted barely audible, rough, rasping short and repeated squeaks. Such a reaction could be obtained merely by lifting the container the pupa was delivered in. After approximately 24 hours, the reaction could not be induced. The resulting imago was apparently normal. No such occurrence could be induced in any other pupa. There was no pupal mortality.

5. IMAGINES

Strong and robust. When fresh they will continue activity until after sundown, crawling in preference to flight, and feeding if undernourished during daylight. In sunlight they will regularly bask with their upper wing surfaces directed at the sun. Cloudy weather induces total inactivity. Heavy rainfall in the latter stages of the imagines' lives has drastic effects. Imagines are knocked to the cage floor and once there they are unable to lift their wings from the wet base, and therefore become soaked. During this stage imagines were artificially fed as they were too weak to reach the solution supplied themselves.

No pairings or courtships were observed. Although four males were matched against five females, all the females became heavily swollen, presumably with ova, even to the extent of impaired flight, yet only two females were observed ovipositing. This leads to the conclusion that only paired and therefore fertile females will lay ova although all will develop them. Therefore ova dissected from females will be infertile. This is difficult to ascertain when all ova, dissected or freely laid, are kept collectively, however there is a very high percentage of obviously infertile ova. Even so, even the actively ovipositing females contained large numbers of unlaid ova at death. The possibility that imagines were unwilling to lay is very likely, especially when the numbers of ova eventually 'laid' is compared against other *Lycaenidae*, which are, under satisfactory conditions, very prolific egg layers. A total of 140 ova were examined, of which only 30-40 were laid. The others were dissected out of imagines that had recently died. Many ova can be stored in the thorax end of the abdomen, at least 100 were taken from the abdomens of two females. These were stained yellow, and clumped. They therefore had to be taken out of the transparent sack-like membrane that kept them in a collective state, and rinsed, in tap water, to remove the stain.

All ova, whether dissected from females, or laid freely, were surprisingly bright in colour, being almost plain white. The greyer colour appears after a week or so.

Imagines would not be induced to oviposit on the larval foodplant supplied in the cage, but preferred to lay between a ridge of netting created in the cage construction, and the side of the cage, along the top edge. This was mainly along the sunward side. This is not satisfactory as ova will have to be artificially overwintered in a container. Could the rejection of the larval foodplant be due to:

- (a) The inability to find the foodplant? Imagines tend to spend all their time at the top sunward surface of the cage. The maximum height of the foodplants supplied was 35 cm (including pot), the cage height was 64 cm. If this is the case, there may well be a link between this and the unwillingness of the imagines to lay.
- (b) The five foodplants being used were well into their second lot of the year's seasonal growth when imagines were introduced to them. Do imagines prefer more mature terminal points to lay on? Later during the year, a solitary ova was found on one of the foodplants that had been supplied to the imagines. This was laid at the terminal point of this season's 'most mature' lot of growth.

A small experiment was carried out to investigate the effect proximity of the larval foodplant has on ovipositing (see under 'methods'). This proved fruitless as egg-laying activities had ceased.

During the latter few days of the imagines' lives, a few ova were found loose on the cage floor. All adults died a natural death.

DISCUSSION

Keeping ova from which the 1984 life cycle was reared under artificial conditions was not satisfactory. Tampering with a liner in the base of their container in order to control humidity was probably unnecessary and probably did more harm than good, due to the extremes which occurred. There is no alternative but to try and keep the ova of the second captive generation artificially. These ova will be kept in a sealed plastic container, and kept as cool as possible under reasonably normal temperatures — in an outhouse — in a semi-lit position in order to overwinter them. No lining material will be present in the clear container.

If the imagines can be induced to oviposit on the larval foodplants supplied to them, a sleeving method for overwintering ova will be experimented with, under various conditions. This is thought possibly to be ideal. It is a possibility that imagines will not be induced to accept the foodplant, but may be stimulated to lay merely by its presence. If this is the case, perhaps imagines could be sleeved over small potted foodplants after ten days or less in a large breeding cage — as used for this year — in

which they should have paired. On the death of the imagines the sleeves may be removed from the larval foodplants, reclosed and hung up in a shaded, protected area with little wind or draught, and the ova overwintered in this manner, spraying the sleeves daily during the remaining summer and when necessary during the winter to prevent dessication. In spring as the emerging time of larvae approaches, the sleeves could be cut into small pieces, each with an ova on, and kept under observation in a transparent container, so, on emergence, larvae could be placed immediately into the appropriate cage.

Methods for rearing larvae were satisfactory, but, bearing in mind that only a maximum of six larvae were being reared at any time, the possible effect of a virus/bacterial outbreak would not be as great as the possible effect that an outbreak may have on a large stock of larvae being intensely reared in a relatively small area. The possibility of an infection occurring is also raised by the close, humid conditions the larvae were reared under. Perhaps — as in my estimation such conditions have less effect on small larvae, mainly because hygiene standards can be kept so much higher — larvae, next year, could be reared as for this year, but very intensely indeed — assuming I have the numbers of larvae hoped for — perhaps 20 to 30 per cylinder cage (refer to 'methods') until the middle of the second instar at approximately 4 mm in length. Then the larvae could be sleeved on potted oaks, forced on unnaturally so that its foliage is expanded to its limit so that the maximum foodplant is presented to the larvae. This will also cut down the amount of damage that could be done through damage to very small leaves. The sleeved plants would then be placed in a well-protected area under natural outdoor temperatures. The net that would be used would not be the standard fine black net previously used as this holds moisture for long periods of time, particularly under shaded conditions, and therefore it promotes dampness within the sleeves. The net would be a fairly coarse, almost transparent nylon type net, resembling plastic rather than material, it therefore does not hold water. It also affords better visibility to the contents of the cage. Small larvae can pass through the net, hence the reason for waiting until the larvae are 4-5 mm in length before introducing them to the sleeve, also it is thought that the larger the larva the less prone it is to being affected harmfully by climatic conditions, otherwise a sleeve method would be used right from the emergence of the larvae.

This method of rearing larvae would also cut down the 'time' aspect involved with such a breeding programme, ie, cleaning routines, obtaining cut larval foodplants etc. During 1985 an effort will be made not to disturb larvae during, or in the preceding stages of, a moult, therefore reducing the possibility of mortality through this cause. Investigations will be carried out during 1985 to determine reasons for the quite extreme colour difference noted between larvae reared under different conditions. The effect was not hereditary as both characteristics

were uniform throughout the batches of stock observed, all of which originated from the same locality, Long Ashton, Bristol.

It was suggested that the presence of, or contact with, high concentrations of chemicals present in the plant feed solution used for the food-plant, may be harmful to the larvae or later stages in the life cycle. This applies particularly to nitrogen, for which there is evidence to suggest that the possibility is not remote. However, this has not been researched into and no case is proven. Even so, plant feed solution may not be used during following years until more information on the subject is available.

Method for keeping pupae was satisfactory.

The problem of obtaining any substantial number of ova from fertile imagines proves baffling. Perhaps the whole cage set-up was not correct? The imagines' cage was positioned in daylong sunlight. The adults, as far as can be gathered are inhabitants of dappled shade, perhaps more protection from the sun is needed? It should be noted that the black net used cut out a large percentage of light. Notes on successful breeding methods of an even more unco-operative hairstreak, *Strymonidia w-album* (white letter) were obtained as there is a high possibility that the two species favour basically the same conditions and environment. Obtaining successful pairings and a prolific amount of ova involved protecting the imagines from the southern sun. The cage used for this was a 50 cm diameter card cylinder stood on end, with the other end cut away at a 45 degree angle. This end was covered in net and faced in a north direction. The imagines paired very easily during mid-afternoon, why at this certain time is not known, the angle of the sun was suggested. Also ovipositing activities were extremely prolific, the larval foodplant's presence was not necessary. These two hairstreaks are both insects of approximately the same requirements under wild conditions; could such a technique be applied with success to *quercus*, or any other of the hairstreaks, not including the green (*Callophrys rubi*) due to its totally different life style?

Standard reference works for the entomologist



Just complete:

The Spiders of Great Britain and Ireland

written and illustrated by Michael J. Roberts

Two volumes of text and structural line-drawings describing and illustrating all 617 species of spiders found in Britain and one volume of superb colour plates depicting 311 species of distinctly different appearance, considerably magnified.

'... no further books directed towards the identification of British spiders will be required for many years to come.' A. F. Millidge

Clothbound

Volumes 1-3

ISBN 0 946589 18 6 £135.00 net

in progress:

The Moths and Butterflies of Great Britain and Ireland Volumes 1-11

edited by John Heath and A. Maitland Emmet

'An absolute must for all those seriously interested in lepidoptera and, for the quality of production and with coloured plates, very good value indeed.' Brian Gardiner, *Bulletin of the Amateur Entomologists' Society*

Vols 1, 2, 9 and 10 available in both cloth and paper covers

Volume 7 (Hesperiidae to Thyatiridae) due Summer 1987

This volume covers all the butterflies and some families of larger moths. The two introductory chapters deal with Classification and Re-introduction and the 24 colour plates are by Richard Lewington.

Clothbound

Vol. 7 ISBN 0 946589 09 7 approx. £47.50 net

also available:

British Pyralid Moths – a Guide to their Identification

by Barry Goater; illustrated by Geoffrey Senior and Robert Dyke

'It is hard to imagine a better work on this particular group of Lepidoptera.' John Bebbington, *Field Studies*

Clothbound

ISBN 0 946589 08 9 £19.95 net

Breeding Butterflies and Moths – a practical Handbook for British and European Species

by Ekkehard Friedrich (translated by Steven Whitebread and
edited by A. Maitland Emmet)

'THE working and reference book for all lepidopterists who wish to breed continental butterflies and British and European moths.' P. W. Cribb, *Bulletin of the AES*

Clothbound

ISBN 0 946589 20 8 £20.00 net

Paperback

0 946589 11 9 £9.95 net

The Dragonflies of Great Britain and Ireland

written and illustrated by the late C. O. Hammond, FRES

Second edition, revised by Robert Merritt (1983)

Generally recognized as the best identification guide to British dragonflies and damselflies, all of which are illustrated in colour.

Clothbound

ISBN 0 946589 00 3 £19.95 net

Paperback

0 946589 14 3 £9.95 net

Colour prospectuses and complete catalogue detailing current and future titles on the British and European fauna will be sent on request.

* Please add £1.50 each for titles £20.00 and under and £2.00 each for titles over £20.00 to cover postage & packing, if ordering direct from the publisher.

Access and Visa cards accepted.

Harley Books,

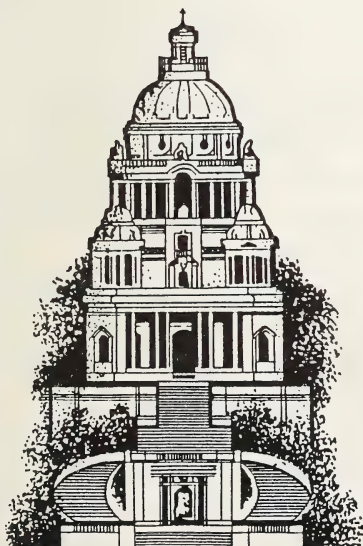
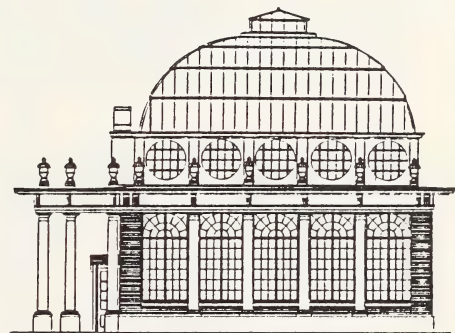
Martins, Great Horkesley, Colchester, Essex CO6 4AH

Tel: (0206) 271216

Williamson Park Lancaster

The Butterfly House

A glorious variety of butterflies — free, flying, feeding and breeding. The Butterfly House is also a nursery, not only for rare and beautiful plants, shrubs and trees, but also for some of the more exotic and rarely seen butterflies and moths.



The Ashton Memorial

*1987 Opening Times and Charges
Open daily 11 am to 5 pm until 30
September.*

*Remainder of the year open Saturday and
Sunday from 2 pm until 5pm.*

*Weekdays by prior booking for parties only.
Memorial ground floor and Life of Lord
Ashton Exhibition is free.*

*Viewing Gallery Adults 20p Child/
Concession 10p.*

*The Edwardians Adults 80p Child/
Concession 40p.*

*The Butterfly House Adults £1.50 Child/
Concession 75p.*

ENTOMOLOGY

BOOKS & PRINTS
BOUGHT & SOLD

●
*Mail Order specialists in rare
and secondhand books.
New books also supplied.*

●
Search service for O/P titles.

●
CATALOGUE FREE ON REQUEST

JOHN TROTTER

11 Laurel Way, London N20
Telephone 01-445 4293



**DATA
LABELS**

PROMPT SERVICE

**OVERSEAS ENQUIRIES
WELCOME**

For details and sample labels,
write to: **P.D.J. HUGO,**
115 Thrupp Lane, Thrupp
STROUD
Gloucestershire GL5 2DQ.

(Please mention this journal in your reply)

MIDDLETON INSURANCE SERVICES

Contact us for all your insurance requirements, including:—

Household insurance, incorporating:

Cover for Cabinets and Drawers

Collections at Home or whilst on Exhibition (including transit)

Apparatus kept in the Home

Equipment used in the Field

Travel insurance for Holiday, Business or Collecting

Trips in the UK or Abroad

Competitive Motor Insurance Premiums for Cars, Motor Cycles,
Mopeds, Vans, Three-wheelers etc.

Full Commercial and Business Insurance Protection

Complete Life Assurance Service, including Savings Plans, Unit

Linked and Endowment, Individual and Company Pensions,

Mortgages and Re-mortgages.

Write or Telephone **David Keen** or **John Turner** for free,
no obligation, advice and quotations.

**ORCHARD HOUSE, 53-56 PARSONS STREET, BANBURY, OXON,
OX16 8NB**

TELEPHONE (0295) 66655

THE AMATEUR ENTOMOLOGISTS' SOCIETY

ANNUAL EXHIBITION, 1987

Saturday, 10 October

11 a.m. to 5 p.m.

**THE CIVIC CENTRE
LAMPTON ROAD, HOUNSLOW, MIDDLESEX**

MAPS on the reverse of this notice, show the location of the Centre.

ACCESSIBILITY—The Centre is well placed between the Great West Road and Bath Road, within easy reach of the M3 and M4 Motorways and London Airport (Heathrow). It is adjacent to Hounslow Central Station (Piccadilly Line) and several Bus routes.

ADMISSION—By Programme at door, 50p.

PARKING—In the free multi-storey car park **only**. NOT IN THE VISITOR'S CAR PARK. Keep all entrances clear.

EXHIBITORS AND DEALERS ONLY will be admitted between 8 a.m. and 11 a.m.

TROLLEYS are not provided and provision should be made for heavy loads.

ENTOMOLOGICAL DEALERS are attending.

REFRESHMENTS—Light refreshments only. All food to be consumed in Refreshment area.

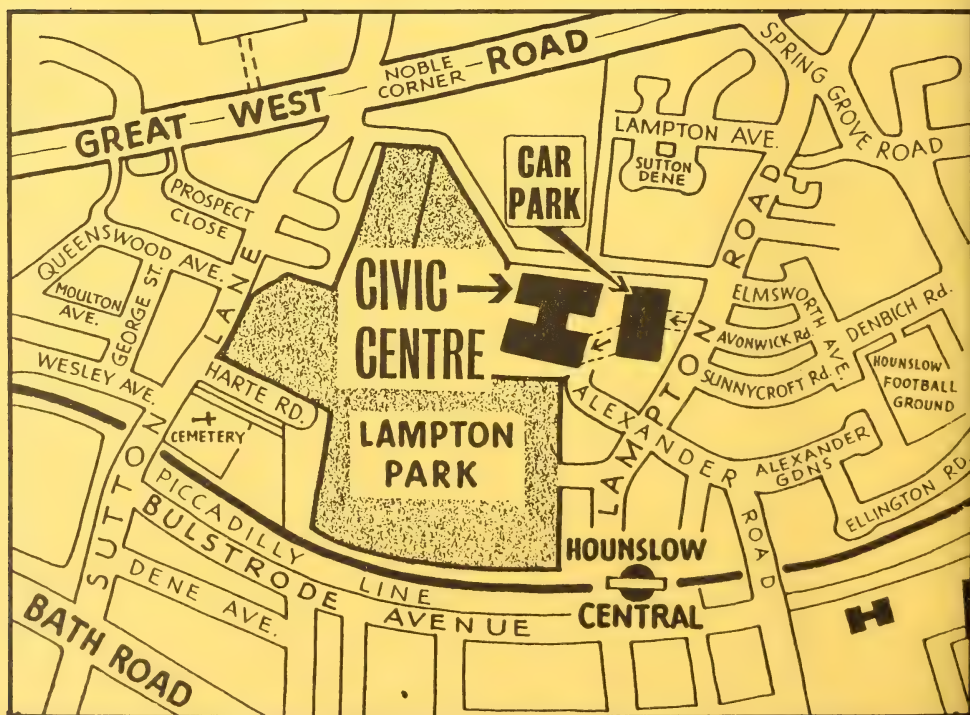
SURPLUS MATERIAL—will be welcome for sale on behalf of the Society's funds.

ANSORGE BEQUEST—Cash prizes and certificates to Junior Members for exhibits at the Exhibition.

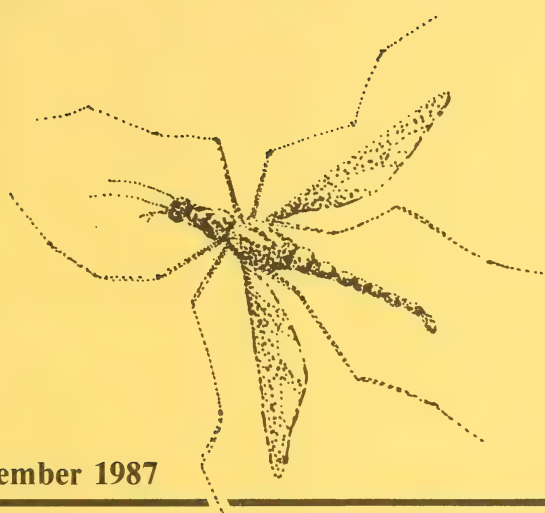
LIVESTOCK—It is the duty of both dealers and buyers to ensure that all livestock is kept in containers which are roomy, hygienic and secure against any possible escape.

EXHIBITS which show long series of wild-caught rare or endangered species will not be allowed.

ALL ENQUIRIES—Roy McCormick, 125 Brock's Drive, North Cheam, Sutton, Surrey SM3 9UP.



S. 36 A



Volume 46, No. 357, November 1987

The Bulletin of the Amateur Entomologists' Society



EDITOR
BRIAN O.C. GARDINER, F.L.S.

The Amateur Entomologists' Society

Founded in 1935

President:	E. LEWIS	11 Court Farm Road, Warlingham, Surrey.
Hon. General Secretary:	C. C. PENNEY	109 Waveney Drive, Springfield, Chelmsford, Essex CM1 5QA.
Hon. Treasurer:	R. A. FRY	The Hawthorns, Frating Road, Great Bromley, Colchester CO7 7JN.
Registrar:	NANCY CRIBB (Mrs)	355 Hounslow Road, Hanworth, Feltham, Middlesex TW13 5JW.
Hon. Bulletin Editor:	B. O. C. GARDINER	18 Chesterton Hall Crescent, Cambridge CB4 1AP.
Hon. General Editor:	P. W. CRIBB	355 Hounslow Road, Hanworth, Feltham, Middlesex TW13 5JH.

WHERE TO WRITE

First subscription (including entrance fee) £5, or £4 under 18, changes of address, non-arrival of Bulletins, membership applications and records.

REGISTRAR (Mrs Cribb)
Address as listed above.

Subscription renewals
£4 or £3 (under 18):

NANCY CRIBB (Mrs), 355 Hounslow Road,
Hanworth, Feltham, Middlesex TW13 5JH.

Manuscripts, drawings and books for review:

B. O. C. GARDINER, Address as above.

Advertisers:

R. DYKE, 6 Grange Park Avenue,
Grange Park, London N21 2LJ.

Exhibition matters:

R. F. McCORMICK, 125 Brocks Drive,
North Cheam, Sutton, Surrey.

General enquiries:

C. C. PENNEY, Address as above.

J.C.C.B.I. representative:

C. HART, Fourpenny Cottage,
Dungates Lane, Buckland,
Surrey RH3 7BD.

Conservation matters:

D. LONSDALE, Forest Res. Station,
Alice Holt Lodge, Wrecclesham,
Farnham, Surrey GU10 4LH.

Wants and Exchange:

M. COLVIN, 1 Sedgewick Close, Pound Hill,
Crawley, Sussex RH10 4BZ.

A.E.S. Exotic Insects Group:

C. J. ESCHBACHER, 38 Frith Road,
Bognor Regis, Sussex PO21 5LL.

**A.E.S. Insect Behaviour and
Ants Study Group:**

B. L. WILLIAMSON, 73 Little Brays,
Harlow, Essex CM18 6ES.

Advertising rates: The following charges apply to adverts in the body of the *Bulletin*.
Full Page £40; Half page £25; Quarter page £15.



OPEN DAILY

Apr 1 to Oct 30

11-5 including
weekends

Worldwide Butterflies and Lullingstone Silk Farm

**LIVESTOCK SPECIMENS
ENTOMOLOGICAL EQUIPMENT**

Send SAE for CATALOGUES



**See where unique
English silk is
produced for Royalty.**

Compton House Sherborne Dorset

(on A30 Yeovil-Sherborne dual carriageway)

Tel: Yeovil 74608



**NEW FEATURES
FOR 1987!**

**WET OR FINE
LOTS MORE TO SEE!**

RONALD N. BAXTER

Entomologists

45 Chudleigh Crescent

Ilford, Essex IG3 9AT

Telephone: 01-590-3285

Breeders of British and Exotic
Lepidoptera, Stick and
Leaf Insects, etc.

Papered Exotic Lepidoptera,
Coleoptera and miscellaneous
insects.

Lists issued twice yearly.
Yearly subscription 50p
£1.00 overseas.

*In your replies please mention
the AES.*

**Member of the Entomological
Suppliers Association.**

E. W. Classey Ltd.

P.O. Box 93

Faringdon, Oxon.

SN7 7DR

England

Books by post, New and

Second-hand

Catalogues on request

LARVAE OF BRITISH LEPIDOPTERA NOT FIGURED BY BUCKLER

by G. M. HAGGETT

This re-publishes in a single volume eleven papers slightly revised, with colour plates, which appeared in the Proceedings of the British Entomological and Natural History Society since 1955. This is a limited edition of less than 300 copies. It is now available to non-members, price £15.00 (postage and packing £1.00 extra). In all, 150 pp. text, fully indexed, and 35 coloured plates.

Applications, with cheques or postal orders payable to the British Entomological and Natural History Society, to:-

R. F. Bretherton, C. B. Folly Hill, Birtley Green, Bramley,
Guildford, Surrey GU5 0LE



THE LONDON BUTTERFLY HOUSE SYON PARK

THE WORLD'S LARGEST LIVE BUTTERFLY SAFARI

Tropical gardens under glass where whatever the weather you can stroll among FREE FLYING butterflies from all over the world. All stages of breeding. Courtship displays among exotic flowers, jungle foliage and water plants.

AN EXHIBITION

An educational collection. Live insects – giant spiders, leaf cutting ants, stick insects, praying mantis etc.

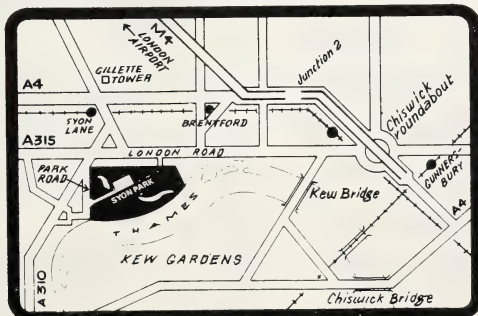
Browse around the Butterfly Shop

Gifts – all with a butterfly motif. Books and charts.
Equipment for the amateur entomologist.
Livestock for rearing at home and school.

A day out for all the family, a motor museum, the Garden Centre and Syon House itself.

How to get there

Open from 10am
to 5pm 7 days a
week throughout
the year



Special rates for
organised groups
and schools – ring
01-560 7272

FREE CAR PARK

The Entomologist's Record

and Journal of Variation

A bimonthly illustrated magazine founded by J. W. Tutt in 1890, is devoted mainly to the Lepidoptera of the British Isles. It also deals with other orders of insects especially Coleoptera, Diptera, Hymenoptera, Orthoptera. Its articles include descriptions of new species and varieties; reports on collecting trips, distribution, habits and habitats of insects and of collecting and study techniques suitable for novice and expert. It circulates in 47 countries.

Annual United Kingdom subscription £15.00

Specimen copies are available from the Publicity Director,
4 Steep Close, Orpington, Kent BR6 6DS
price £1.20, postage included.

Butterfly Farm

(CHRISTCHURCH)

14 Grove Road East
Christchurch, Dorset
BH23 2DQ

Tel: (0202) 471336

Suppliers of livestock and breeding cages to schools and entomologists.

Wholesale suppliers of

Butterfly Farm Shop requisites.

Butterfly framing service to the trade and collector. S.a.e. for livestock and cage details.

Please note that we are not open to the Public.

Secondhand & antiquarian

BOOKS

Butterflies, moths and other entomology.

BOUGHT AND SOLD
Frequent catalogues issued

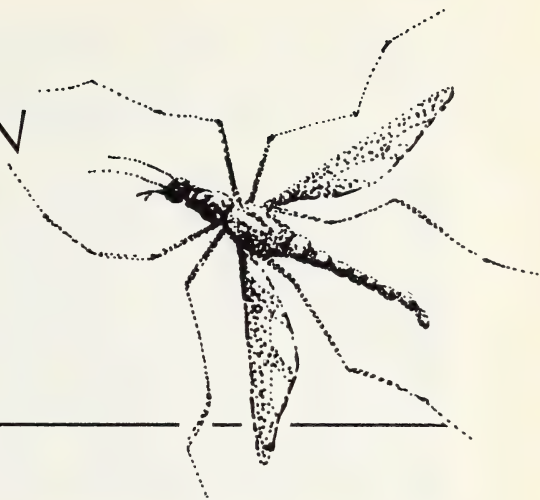
DAVID DUNBAR

31 Llanvanor Road, London NW2
Telephone 01-455 9612

Collections and single items of value purchased.

AES BULLETIN

No. 357



EDITORIAL

One of the problems in running any Society is how to keep all the members happy and it sometimes happens that however hard it tries some decisions taken in the best interests of the majority by a democratically elected Council will upset some of the membership. In any Society, particularly one as large as ours, there will also be the occasional 'bad hat'. It is also a fact of life that those who set out to be 'bad hats' are, before they are found out, both most respectable, very plausible, and in order to foster this image will join the appropriate bodies and move in the right circles.

That there is nothing new in this can be found in the writings of the late P. B. M. Allan where he gives some account of the nefarious activities of some nineteenth century entomological traders. In the entomological press of a century or more ago there also appear 'warnings' against 'sharpers'. Indeed, nearer to the present time, there was one pre-war trader, who advertised in the AES publications and so far as I can remember was a perfectly honest entomological trader. Unfortunately the insect trade did not suffice to support him in the style he felt he deserved and it was rather a shock to read in the daily press a report that he had been given ten years for, I believe, armed robbery.

Anyone who has read the daily press or watched the TV news bulletins lately must also be aware that even members of the most prestigious organisations, such as the Law Society, the Stock Exchange and Parliament have been convicted of wrong-doing. The Entomological fraternity does not see swindling on the large scale that at times occurs in other professions and although Officers of the Society do, from time to time, receive complaints from members about another member, nearly always

in respect of trade dealings, or rather lack of them when goods are promised but not delivered after money taken, in most cases this turns out to be inefficiency, not deliberate attempts to swindle.

In one or two cases where we have had complaints, while the complained about individual may have been a member of the Society, his/her adverts which had led to the problem had not, if fact, been in any medium controlled by the Society. So far as the Society has been able to ascertain, in nearly all cases where bad dealing has happened in the past, no deliberate fraud has been intended. The usual reason is inefficiency (under which term I also place optimism as to what stock will actually be in hand), but approaching bankruptcy is another cause why monies may sometimes be taken and neither goods nor refunds given. Even the most long-standing and prestigious of firms can suffer this fate, as witness the demise, very many years ago, of Messrs Flatter & Garnett, one of the oldest established dealers in biological materials and apparatus. Curiously enough another entomological dealer at this time, who traded as an individual, also went bankrupt. While it is unfortunate that there may be among our membership some who do not give good value or efficient service, there are many who do. For those who do not, we can but write them a note pointing out that we have received complaints and that the Society expects ethical standards to be observed. So far as our records go, in only one recent instance has a member ever been actually expelled from our Society; there may have been earlier occasions, but even so, in the fifty years of our existence, losses from this cause have been negligible and far fewer than have been the expulsions from many other organisations.

THE BUTTERFLY AND THE CATERPILLAR

A Fable Old Is Here Retold

<p>A butterfly, one summer morn, Sat on a spray of blossoming thorn And, as he sat and drank his share Of honey from the flowered air, Below, upon the garden wall, A caterpillar chanced to crawl. "Horrors!" the butterfly exclaimed, "This must be stopped! I am ashamed That such as I should have to be In the same world with such as he. Preserve me from such hideous things! Disgusting shape! Where are his wings! Fuzzy and grey! Eater of clay! Won't someone take the worm away!" The caterpillar crawled ahead. But, as he munched a leaf, he said,</p>	<p>"Eight days ago, young butterfly, You wormed about, the same as I; Within a fortnight from today Two wings will bear me far away To brighter blooms and lovelier lures, With colours that outrival yours. So, flutter-flit, be not so proud; Each caterpillar is endowed With power to make him by and by, A blythe and brilliant butterfly. While you, who scorn the common clay, You, in your livery so gay, And all the gaudy moths and millers, Are only dressed up caterpillars."</p>
---	---

Joseph Lauren

THEFT!

STOLEN FROM BRISTOL MUSEUM

In May last year (*Bulletin* 45:98 — 102) we featured the City of Bristol Museum and Art Gallery. It is very sad to report, therefore, that a major theft has occurred and a large number of valuable British butterflies and moths have been stolen from the Museum. As this appears to have taken place over a period of three years (1983-86), it seems likely that, as is usual in these circumstances, some trusted individual has been responsible. Most of the stolen specimens are, as might be expected, rare and valuable, including extinct species and unusual aberrations, and are from the collections of Bartlett, Coney, Lodge, Blatchford and Norgrove and all bore data labels, either handwritten or printed. Some examples are as follows:-

Printed: Royston/Aug1920/L.W.Newman; Folkestone/June1923/L.W.Newman;
Folkestone/W.Crocker/June1923; Sarum/(date)W.Bartlett; ex coll./J.Mason.
Dursely/(date)W.Bartlett.

Handwritten: N.Devon/June27/49/J.W.Norgrove; N.Cornwall/1911/J.W.N.;
J.W.Norgrove/N.Cornwall.1911.

The Bartlett collection contained a considerable number of specimens bearing the names of others from whom he had acquired them. They include Noddford, W. M. G. Pether, W. Crocker, Fox, N. G. Nash, L. A. E. Sabine, A. Pearman.

Many of the 4500 stolen moths are rare or subject to interesting variation. The stolen butterflies included rare and extinct species as the Silver-spotted skipper, Northern brown argus, varieties of the Chalkhill blue, Chequered skipper, Large blue and Large copper. These last three in particular are so infrequently on the market that any that have been offered since 1983 must of necessity be suspect.

Should any member be offered, or know of, or think they may have unwittingly bought, any specimens they suspect might have come from Bristol, they are requested to get in touch with Det. Constable M. Lewis, Avon and Somerset Constabulary, telephone (0272) 277777 Ext. 7161.

OMISSION FROM THE 1987 MEMBERSHIP LIST:—

BAILEY, Dr N. M. (1230)

3 High Grove, Little Switzerland, Douglas, ISLE OF MAN. (ecol.)

THE AMATEUR ENTOMOLOGISTS' SOCIETY



ANNUAL REPORTS FOR 1986 OF THE SOCIETY AND ITS ASSOCIATED BODIES

OF THE COUNCIL

Council is pleased to report that 1986 has been another successful year for the Society. Membership has continued to grow and on 31st December 1986 there were 2017 members, comprising 10 Honorary, 40 Life, 37 Affiliated/Exchange, 1809 Senior and 111 Junior members. The Society enrolled 249 new members (including those reinstated) and lost 215 through death, resignation or striking from the roll: a net gain of 34 members. A high turnover of members creates a particularly heavy administrative load and we are especially grateful to our Registrar, Mrs Cribb, for all her work on our behalf. During the year Mr L. Christie and Mr E. S. Bradford were elected Honorary Life Members in recognition of their major and long-standing contributions to the activities of the Society.

Four editions of the *Bulletin* were published in 1986 under the Editorship of Mr B. O. C. Gardiner, containing a record 266 pages of text and numerous illustrations. During the year the Society launched a major new publication — a second and completely revised edition of the Hymenopterist's Handbook, edited by Clive Betts and Daniel D'A. Laffoley. The first edition was published in 1945 and had been unavailable for some time.

The Council met on six occasions during the year at its new venue, the Central Hall Westminster. The AGM was held at the rooms of the Royal Entomological Society, Kensington. The meeting was chaired by our President, Mr C. Hart who gave a fascinating talk entitled "In search of the plume — a close look at the habitats, ecology and early stages of the Plume moths".

During the year a very successful second Junior Fieldweek organised by the Reavey family was held in the New Forest. The second Jealott Photographic

Competition was held and the winning entries displayed at the Annual Exhibition. A fuller report of both events will be published in the *Bulletin*.

The Annual Exhibition this year was again held at the Civic Centre, Hounslow and a full report will appear in the August *Bulletin*. Following changes in both the Law and public awareness, the Council has revised its policy on trading at the exhibition. Whilst dealers will be fully informed of these changes, members may be interested to know that these include a ban on the sale of vertebrates, provision for the safe and humane transportation of invertebrates and restriction on the trade in British or other endangered species as well as a total ban on those protected by National or International legislation. The Council is conscious that such restrictions will not receive universal support from members but is firmly committed to the promotion of responsible attitudes and practices in entomology.

Mr M. Ventom retired from the Council during 1986 and the responsibility for Wants and Exchange passed from Mr S. Painter to Mr M. Colvin.

Council records, with much regret, the death of several members, including A. N. Brangham, an Honorary Life Member and past President of the Society, A. J. Winter and H. G. Heal.

C. C. Penney,
Honorary Secretary.

OF THE TREASURER

I am very pleased to be able to report that 1986 was another successful year for the Society financially. If we set to one side the cost of additional Jubilee publications in 1985, the changes year-on-year are as follows:—

Income up by just over £1,000 and Expenditure falling slightly, with the result that a surplus of £1,954 was achieved.

The results on the publications front are not quite so encouraging, with sales down by £2,000 on the previous year and the trading surplus down from £1,859 to £1,441. Nevertheless, the fund has a good cash reserve to finance future publications and 1987 should see an improvement in income with the launch of the revised Hymenopterist's Handbook at the end of 1986.

I should like to record my thanks to the Registrar for taking on the work of subscription renewals from Roy Stallwood, which has lessened my own workload with a single point of contact for all membership subscriptions. Also, my thanks again to Tony Pickles of Robert Watson & Co, for auditing the Society's accounts for 1986.

R. A. Fry,
Honorary Treasurer.

PUBLICATIONS FUND AT 31st DECEMBER 1986

1985	1986	1985	1986
£	£	£	£
26011			
	Balance at 1st January 1986		
1859	Add: Trading Surplus for the Year	8734	Investments:
	National Savings Bank		National Savings Bank
938	Interest		Investment Account
28808			Current Assets:
			Stocks at lower of cost or valuation
		15602	
		6740	Sundry Debtors
2715	Creditors	447	Cash at Bank
		22789	
<u>£31523</u>	<u>£38169</u>	<u>£31523</u>	<u>£38169</u>

1986
£
14087

18874
4666
542
— 24082

STUDY GROUPS' FUND

	£	£	£
364	Balance at 1st January 1986	942	
578	Add: Surplus income for Year/(Deficit)	(247)	
			Current Assets:
		920	Cash at Bank
		22	Building Society A/c
<u>£942</u>	<u>£695</u>	<u>£942</u>	<u>£695</u>

INCOME AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED 31st DECEMBER 1986

EXPENDITURE		INCOME	
1985	1986	1985	1986
£	£	£	£
Bulletin Costs:		Subscriptions:	
203 Editorial	174	6812 Ordinary and Affiliate	7072
5112 Printing	5328	378 Junior	333
2469 Despatch	2387	136 Life Membership Fund	156
114 Indices	128		7561
2254 Jubilee issue	—	2254 Transfer ex Hammond Fund —	—
	8017	Jubilee Bull. costs	—
Membership Services		809 Donations	962
481 Membership List	478	277 Enrolment Fees	248
131 Wants/Exchange Lists	86	Investment Incomes (Gross):	
	564	170 Dividends	517
Administration etc:		927 National Savings Interest	1006
302 Stationery and Notices	281		1523
144 Postage and Carriage	153	Other Income ((Net):	
728 Registrar's Fees	822	993 Advertising Revenue	1295
366 Meeting Expenses	367	1088 Annual Exhibition	1020
25 Study Groups' Support	25	62 Badges	66
121 Depreciation	88		2381
67 Insurance	213		
462 Sundry Expenses	37		
	1986		
	154		
103 Conservation	—		
13082	10721		
824 Surplus Income to General Fund	1954		
	£12675		£12675
			£13906
			£12675

OF OUR REPRESENTATIVE ON THE JOINT COMMITTEE FOR THE CONSERVATION OF BRITISH INSECTS

There have been two meetings of the committee in the past twelve months and also three meetings of the executive sub-committee. AES representatives have been present at all the meetings.

Much of the work of the JCCBI is now being done within the executive sub-committee. There are only seven members to the sub-committee and this means that discussion is more open and decisions can be reached more quickly.

Through representations made by the JCCBI The Bern Convention on European Wildlife has appointed a committee to examine the status of critical European insects and to recommend any action. In May 1986 the NCC asked us to comment on insect species which were in decline.

Two of the Society's members were involved for some time in drawing up outline recovery plans and other suggestions for some critical species of macrolepidoptera, and these were duly submitted.

No surveys have been commissioned in the past year but Dr Warren, the surveys officer, reports that the status of the Silver-studded blue in Devon has been the subject of an MSc thesis and this has provided much useful material. The Brown hairstreak butterfly seems to be declining in some areas because of modern trends in hedgerow and wood management. The NCC has responded to this by issuing a leaflet to farmers showing how these habitats may be better treated to encourage the insect. I am glad to report that larvae of the Large blue from Sweden were liberated in a suitable site in the South-west last year. The outcome this summer will be eagerly awaited.

Insect conservation in the UK is very fragmented and sometimes the advice given is contradictory. In response to this problem the committee plans to become the acknowledged 'clearing house' for issues which arise, and a proposal has been made to appoint regional representatives to the JCCBI. The details have not yet been finalised, but the intention is to make all the local news media and other relevant organisations in an area aware of the representative, who could then either answer questions directly, or else pass on the query to a suitably qualified person.

Reports from the National Trust observer indicate that the Estates Advisory Office at Cirencester is well aware of the importance to insects of many of their sites. Where appropriate, the office makes recommendations to individual Trust locations to promote better conservation practices on their land.

The Forestry Commission has asked the JCCBI for more information on insects in their woodlands and for records from the past. It is hoped to organise a response through the proposed regional representatives. I am sorry to report that there has been little progress with the plan to appoint a full-time Conservation Officer for the JCCBI. The delay has been with one of the grant-aiding bodies and there seems little likelihood of this being resolved in the near future.

OF THE EXOTIC ENTOMOLOGY GROUP

The 1986 membership figures at 214 were down on the 1985 figure. Failure to produce a regular *Newsletter* was probably the main cause. As Chris Hamilton had not received sufficient material to publish by June, he resigned as editor and the position was filled by Julian Hulme who produced the Autumn *Newsletter* in September and a winter edition in December. Julian has adopted a policy of devoting the major part of each *Newsletter* to a particular family of exotic insects and started with the winter edition on Phasmids.

No meetings were arranged during the year, but Gareth King has come forward and volunteered to act as Meeting Organiser for 1987 and we look forward to his efforts.

The Monthly Information Sheet was produced regularly on the last Monday of every month throughout the year and filled two sides of A4 paper with details of members' surplus livestock for sale and wanted. The 1986 subscription fee included the cost of the MIS for all members instead of making it a separate item and this certainly made the task of administration easier, as did the advent of computer printed address labels which saved a great deal of writing each month.

We put on an excellent display of livestock at the AES Annual Exhibition and thanks are due to Wesley Caswell, Roy Chuter, Steven Halfpenny, Brian Morris, Tony Rouse, Prem Roy, Keith Stiff and Roy Taylor for their contributions.

Chris Eschbacher,
Honorary Secretary.

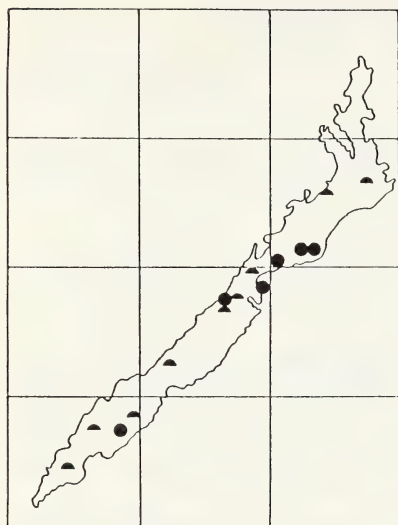
SWALLOWTAIL BUTTERFLIES ON THE ISLAND OF PALAWAN: An ecological study of some Philippine Papilios

by Robert Harvey (6904)

INTRODUCTION

During my time as an undergraduate, I organised and led The Cambridge Palawan Expedition 1985. The purpose of the expedition, which had four participants, was to make biological studies in the tropical rain forest of the island. One of the projects carried out was a study of Palawan's Swallowtail butterflies, of which 32 species are known, concentrating on those which are endemic. The aim was to discover the distribution and abundance of these species and to learn details of their ecology, especially previously unknown larval foodplants. In this way it was hoped to assess the butterflies' status in relation to those factors threatening their survival.

Palawan is a mountainous and underdeveloped island, retaining a high percentage of its natural rain forest cover. However, as elsewhere in the tropics, deforestation is occurring at an accelerating rate, estimated in 1979 as 5000 ha per annum (Hunting Technical Services 1983). Commercial logging is widespread, but as this is selective it permits subsequent forest regeneration. The most important threat to the butterfly fauna is likely to come from shifting cultivation which, by burning down large areas of lowland forest, removes habitats and destroys hostplants.

Fig. 1. Distribution of *G. megaera*.Fig. 2. Distribution of *L. neptunus*.

Current knowledge about six Swallowtails endemic to Palawan, derived from published sources and new information discovered during the expedition, is summarised below. The distribution maps show records in 10km squares; those collected during the trip by observation and from local collectors, are shown as complete circles whereas old records are shown as semicircles. The status of each species has been assessed in accordance with IUCN guidelines.

THE BUTTERFLIES

GRAPHIUM MEGAERA

Distribution: Not recorded by the expedition. Records from local collectors are shown in Fig. 1.

Hostplant: Not known. The local name was said to be "Bobonato".

Life-History: Not known.

Abundance: Said to be common in the dry season (March - May).

Status: Indeterminate (Collins & Morris 1985).

LOSARIA NEPTUNUS DACASINI

Distribution: Local and scarce. Only three sites were known to local collectors (Fig. 2), of which we studied one in the Caramay valley in a patch of forest on a hillside at 100m altitude.

Hostplant: Previously unknown, specimens collected by the expedition have been identified as *Thottea tomentosa* Ding Hou. This is a subwoody herb, 30cm high, which grows in shady, moist places in forest, locally sometimes common from lowland to 1200m (Ding Hou 1984). Apparently not previously recorded from Palawan.

Life-history: Not previously published. Larvae and pupae from Caramay were examined. Third instar larva is 16mm long, white marked with black and has a pair of tubercles on each segment which are orange on segments 1, 4, 8 and 9 but white on the remainder. The fifth instar larva has a grey-brown body with extensive black markings and orange tipped tubercles. The pupa resembles that of *Pachliopta atropos*.

Abundance: It was difficult to assess the density of early stages at the Caramay site because our contact collected larvae regularly. However, the site cannot have supported a population of more than a few hundred individuals, and the number of other such sites may be fairly small.

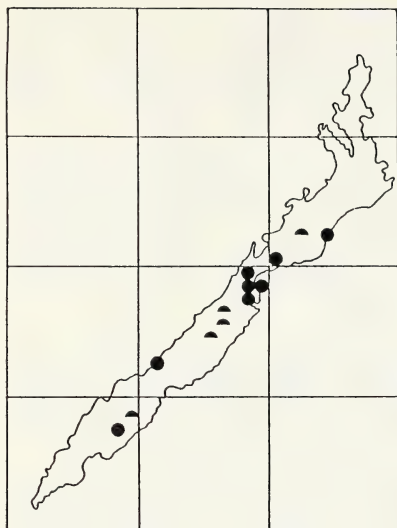
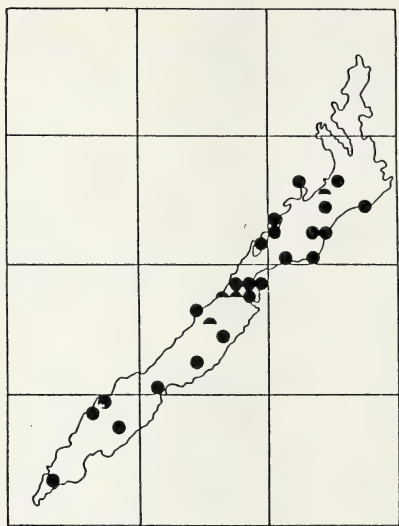
Status: As the foodplant occurs in lowland forest, it is vulnerable to agricultural land clearance. The breeding site at Caramay is likely to be safe owing to the inaccessibility of the steep hillside, but deforestation in the area has clearly been rapid over the last few years and must have reduced the extent of suitable habitat. There is no information on the past state of populations, but it is inevitable that *L. neptunus dacasini* is declining in the face of deforestation and may soon become endangered. In consequence it should be assigned vulnerable status.

PACHLIOPTA ATROPOS

Distribution: This butterfly appears to be fairly widely distributed on the island, judging from our own sightings and the reports received (Fig. 3).

Hostplant: Previously unknown, this was found to be *Aristolochia philippinensis* Warb, an erect shrubby plant growing 0.5 - 1.0m high which was present in secondary forest and can be readily cultivated. Ding Hou (1984) records it from thicket and forest up to 900m on various Philippine islands, but there is no previous record from Palawan.

Life-history: A breeding area was located at Santa Lourdes, and captive larvae and pupae, which have not previously been described, were examined. The third instar larva has one pair of tubercles on each segment and is unicolourous black except for the tubercles on segments 1, 4, 5 and 8, which are red. The pupa, which is pale brown with black markings lasts 19 days in captivity. One larva reared in captivity by a local collector was reported to have cannibalised a fresh pupa, in which respect it may be significant that ova at the Santa Lourdes sites were found to be laid singly on each hostplant, a common adaptation to avoiding cannibalism (Chew & Robbins 1984).

Fig. 3. Distribution of *P. atropos*.Fig. 4. Distribution of *T. trojana*.

Abundance: A search of 15 hostplants at Santa Lourdes revealed only two ova, and no larvae or pupae. Though extrapolation is difficult, this supports the general impression that although widespread, this butterfly occurs at rather low densities.

Status: The hostplant, as a lowland species, is undoubtedly threatened by forest clearance for cultivation and populations of the butterfly must inevitably have declined as a result of deforestation. Although it is not in so critical a position as *L. neptunus*, *P. atropos* must also be considered vulnerable.

TROGONOPTERA TROJANA

Distribution: Our own observations and local collectors indicate that this butterfly is widespread on Palawan (Fig. 4). Males were often seen outside the forest in the lowland, whereas females appeared to be confined to montane forest (500m or more).

Hostplant: Tsukada and Mishiyama (1982) state this to be a montane species of *Aristolochia*, and samples collected by the expedition have been identified as *A. foveolata* Merr. This is a vine growing to 8m or more which is abundant in well-developed secondary forest at an altitude of 500m in the Irawan valley. An area of 440 square metres which we surveyed contained 35 plants. Ding Hou (1984) records its occurrence up to the 2100m mark.

Life-history: Larvae of various instars were found on the hostplant at Irawan. Third instar larvae, which measure 35mm, are black with brown markings and have three pairs of tubercles on segments 2 - 3 with two pairs on the remaining segments. Fourth instar larvae are similar but 50mm long and brown. The fifth instar reaches 90mm and was seen to evert a yellow osmeterium upon disturbance, though the reaction is soon lost in response to repeated handling.

Abundance: A careful search of 21 hostplants at Irawan revealed eight larvae, a density of 0.38 per plant or 0.03 per square metre. However, these were concentrated on only three plants, and no larvae were found on any of the numerous foodplants occurring outside the area of 440 square metres surveyed. This irregular distribution makes it hard to assess population density over a wider area, but the figures can be compared with those of 25 larvae per acre (4047 square metres) for the rare birdwing *Ornithoptera alexandrae* in New Guinea (Parsons 1984).

Status: Although the hostplant is restricted to primary or well-developed secondary forest, it is unlikely to be threatened by logging which is selective and allows regeneration, and its montane distribution makes it relatively safe from clearance for cultivation. In view of this and the relative abundance and wide distribution of the butterfly, *T. trojana* may be considered neither rare nor threatened.

TROIDES PLATENI

Distribution: The species is widely distributed in Palawan (Fig. 5) and was seen frequently in the lowlands, including the suburbs of Puerto Princesa.

Hostplant: *Aristolochia tagala* Chamisso (Tsukada and Nishiyama 1982). This is a lowland vine occurring up to 800m in forests and thickets (Ding Hou 1984), and it was reported to grow in scrubland and cleared areas. Local breeders stated that in captivity *T. plateni* will feed on the plants which have been identified as *A. foveolata* and *A. philippinenses*.

Life-history: Previously described as the species is often reared by local collectors (Tsukada and Nishiyama 1982).

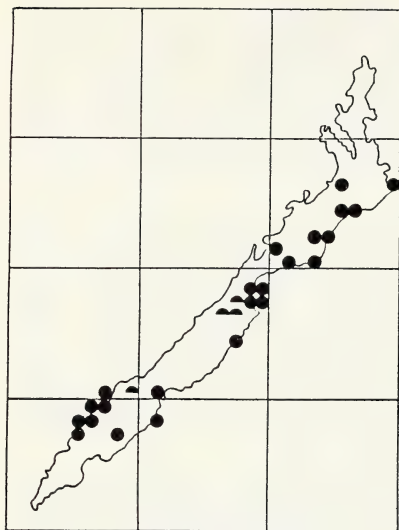
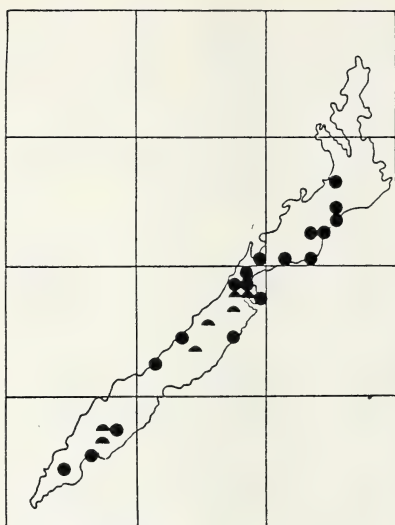
Abundance: Not measured, but the species appeared to be at least as common as *T. trojana*, being encountered more frequently.

Status: As the foodplant is reported to be quite ubiquitous and the butterfly is both common and widespread, it may be considered neither rare nor threatened.

PAPILIO LOWI

Distribution: Common in forested areas, cultivations and suburbs, and reported to be widespread (Fig. 6).

Hostplant: A variety of wild and cultivated *Citrus* are known, including varieties known locally as 'soha', 'otban', 'cahile', 'cano', 'kalmanse' and 'kalamandarin'.

Fig. 5. Distribution of *T. plateni*.Fig. 6. Distribution of *P. lowi*.

Life-history: We did not rear this species, but local collectors, who maintain considerable stocks, reported several observations. The ova last three days, the larvae fifteen days and the pupae eleven days. Fully grown larvae are green with mottled white markings and defensive eye-spots on segment three which are displayed forward upon disturbance. The pupae are pale green or pale brown, and this is said to correlate with the colour of the surface on which pupation takes place. The adults can be readily hand-paired in captivity two to three days after emergence, and it was reported that fertile crosses can be obtained in this way with *P. rumanzovia*, an allopatric species from other Philippine islands.

Abundance: Not quantitatively assessed, but the species was frequently encountered and apparently common.

Status: As it thrives on cultivated foodplants, *P. lowi* is the least likely to be endangered of all Palawan's endemic Papilionidae, so it may be considered neither rare nor threatened.

CONCLUSIONS

Palawan has a diverse fauna of Swallowtail butterflies including several notable endemics. The most likely threat to the survival of these species is deforestation for shifting cultivation, and this is likely to be affecting adversely the populations of localised lowland species. Particularly under threat are *Pachliopta atropos* and *Losaria neptunus dacasini*, which are assigned vulnerable status. Conservation of these butterflies in the wild depends upon the protection of areas of lowland forest from destruction.

ACKNOWLEDGEMENTS

I am particularly grateful to Dr N. M. Collins of the IUCN Conservation Monitoring Centre for his help and advice in planning this project. An enormous amount of practical assistance was provided by many people on Palawan, especially Rod and Roy Rodriguez, to whom the expedition is indebted.

REFERENCES

- CHEW, F. S. and ROBBINS, K. (1984) Egglaying in butterflies. In Vane-Wright & Ackery.
 COLLINS, N. M. (1985) International trade in swallowtail butterflies. *Bull. amat. ent. Soc.* 44:64-76.
 COLLINS, N. M. and MORRIS, M. G. (1985) Threatened swallowtail butterflies of the world. The IUCN Red Data Book.
 D'ABRERA, B. (1982) Butterflies of the Oriental region. Vol. 1.
 DING HOU (1984) Aristolochiaceae. In *Flora Malesiana* 10:53-108.
 HARVEY, R. N. (Ed.) (1986) Final report of the Cambridge Palawan Expedition. Privately published.
 HUNTING TECHNICAL SERVICES LTD. (1983) PIADP Integrated Development Programme, Stage 1 Discussion Paper.
 IUCN (1980) How to use the IUCN Red Data Book Categories. IUCN.
 OWEN, D. F. (1971) Tropical Butterflies.
 PARSONS, M. J. (1984) The Biology and conservation of *Ornithoptera alexandrae*. In Vane-Wright & Ackery.
 TSUKADA, E. and NISHIYAMA, Y. (1982) Butterflies of the SE Asian Islands. Vol. 1. Papilionidae.
 VANE-WRIGHT, R. and ACKERY, P. (1984) The Biology of butterflies,. Symposium No. 11, Royal Entomological Society.

THE MOUSE WITH A ROYAL APPETITE

Incidentally, the British field mouse
(Apodemus apodemus)

As ever was, Whose chances in the wild,
 Of sampling the stately monarch,
 As is here the milkweed known,
 Is virtually nil.
 It does, none the less,
 When entering my breeding cages,
 Consume with relish, and in
 Quantity, all abdomens
 In the quiet of the night:

Thoraces and wings, however,
 He cares for not;
 And do not think
 That these were diet reared
 And hence not toxic.
 For many years did I possess,
 England's one and only
 Infestation— now sadly plowed out,
 of true American Jimson weed.

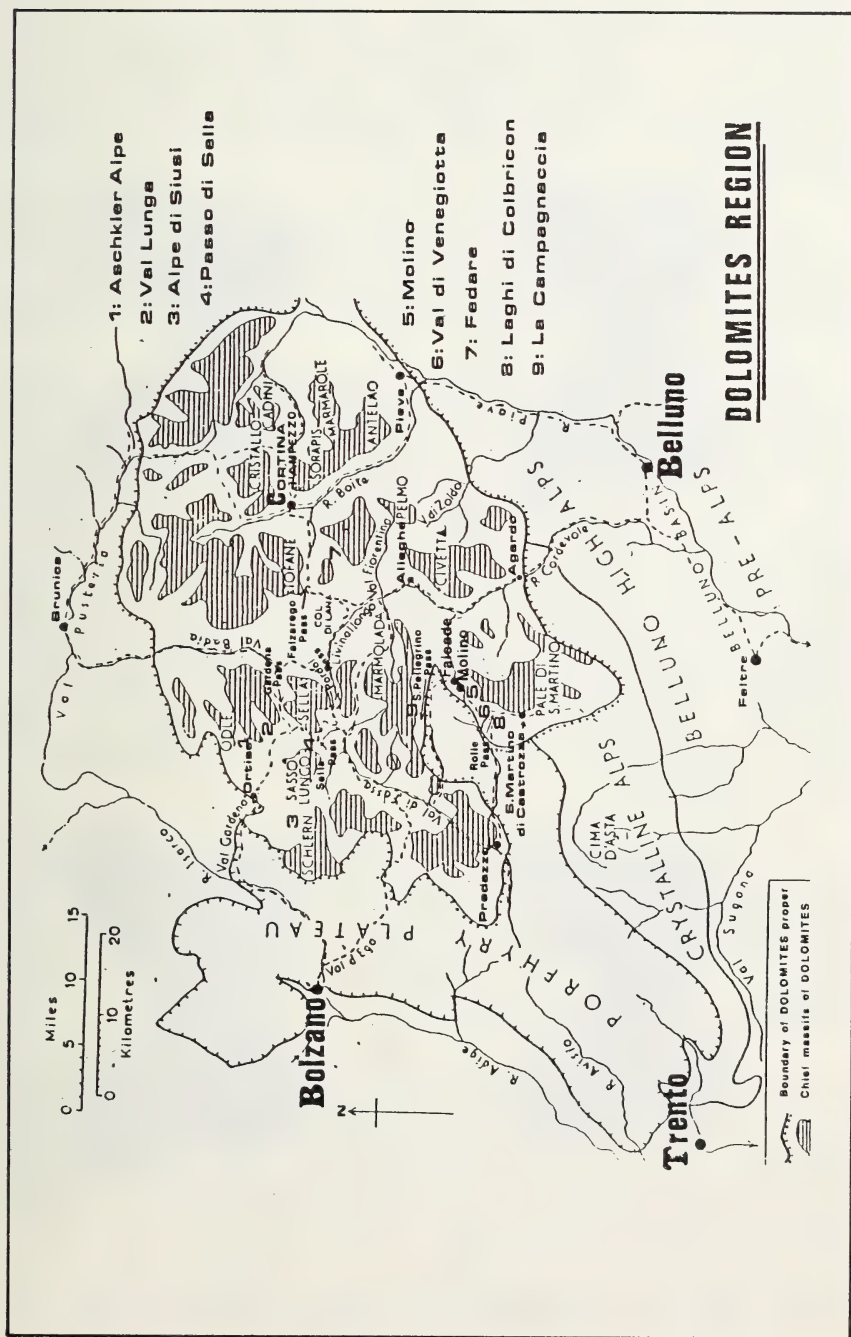
SOME OBSERVATIONS ON THE EREBIA GENUS OF BUTTERFLIES IN THE DOLOMITES DURING JULY 1985

by Nigel Gossling (5169)

This large and distinctive group of butterflies has occupied the study of many entomologists professional and amateur alike for many years and much informative knowledge has been gained over the last 80 years or so. This fascination may arise out of the interesting geographical distribution of the many species comprising this group which is largely montane. Although many are confined to regions of the Central European Alps, some are found in other mountain areas of Europe with a few species scattered elsewhere in Asia, Japan and North America. The ability of this genus to survive in such remote regions and breed within very variable climates is but another of Nature's mysteries. Unfortunately little is known of many species' life-cycles because of the extreme difficulties in sustaining field study work and the fact that for much of the year the breeding grounds are covered in thick snow wherein the young larvae cannot be found.

Although many holiday visitors may dismiss these dark brown "Mountain ringlets" as simply common alpine butterflies, such an attitude would be wrong as this genus deserves better recognition and understanding. A little knowledge of the typical habitat conditions and the average altitude range of each species will render possible the task of identifying with reasonable certainty. Although some species can be photographed without too much difficulty with the aid of proper equipment, it has to be admitted that a full identification of a species or subspecies, not to mention the many different forms, can only be undertaken by collecting a small series of butterflies in each area visited.

All Erebiid species have only one brood of butterflies on the wing each year for a short period (three to four weeks at the most) generally between late June and early September with most species concentrated within the first three weeks of July; they will only be active in sunshine and are very difficult to find in cloudy and rainy conditions as they tend to hide themselves with much success amongst the basal areas of grasses and general meadow flora. However, many species during dry spells will roost on long blades of grass in groups and can be easily located in this manner in late afternoon or early morning before the warmth of the sun activates flight. Little is known to date about larval activity and many larvae have yet to be discovered! So far as is known, the larvae feed on various grasses and some are believed to take up to two years to complete full larval growth. The pupal period is probably little more than three weeks in early summer. There is no evidence to show that the butterfly is capable of surviving winter conditions or hibernating as such. The extent of available sunshine and warm daily temperatures do certainly play an important part in the breeding pattern and the numbers present in certain localities from year to year.



Fortunately, local farming husbandry, grazing and hay-cutting do not appear seriously to restrict breeding of those species found in the lower alpine regions. Extensive afforestation of conifers is unlikely to be beneficial and no butterflies will breed effectively within thick forest which excludes sunlight from reaching the ground level and promoting grass and floral growth.

The unique character and geographical isolation of the Dolomites has caused a number of extreme local forms and subspecies to arise throughout the region. The amount of instability present amongst certain species also demonstrates that the continuing and active evolutionary processes are very much in evidence in this region.

The Dolomites are an alpine mountain group lying in the eastern section of the north Italian Alps, bounded by the valleys of the Isarco (northwest), the Pusterin (north), the Piave (east and southeast), the Brenta (southwest) and the Adige (west). The range comprises a number of impressive peaks, 18 of which rise to more than 3,000 m. The highest point is the Marmalada (3,342 m) the southern face of which consists of a precipice 610 m high. Geologically, the mountains are formed of light-coloured dolomitic limestone which erosion has carved into grotesque shapes. The resulting land-forms include jagged, saw-edged ridges, rocky pinnacles, scree slopes of limestone debris, deep gorges and numerous steep rock faces at relatively low levels. Glaciated features occur at higher levels; forty-one glaciers lie in the region. Many of the lower and more gentle scree slopes were once forested; only patches of woodland remain, however, interspersed with grassy meadows. The main valleys provide relatively easy access to most part of the Dolomites.

The main north-south road uses the Campolongo Pass (1,875 m). The east-west roads cross the well-known Passes of Pordoi (2,239 m), Falzarego (2,117 m), Tre Croci (1,636 m), Sella (2,240 m) and Gardena (2,212 m). The main centre of this tourist region is Cortina d'Ampezzo. Other resorts are Aurongo, San Martino di Castrozzo and Ortisei with its narrow gauge railway. On the western and south eastern margins respectively, are located the larger towns of Bolzano and Belluno.

My observations were carried out whilst enjoying a camping holiday with a number of botanists and were largely concentrated first in the eastern region around the Val Gardena across to the Sella Pass and then in the southern region adjoining and lying to the north of the Rolle Pass (1,970 m). Both areas yielded a very interesting cross section of Erebiid species to be found in the Dolomites enhanced by good weather conditions and the fortunate timing of my visit.

Brief notes on all species and relevant subspecies and forms encountered are set out as follows with a map for general locations and a check list:



UNDERIDE

Erebia euryale
ssp. ocellaris



UNDERIDE

Erebia euryale
ssp. ocellaris



Erebia euryale
ssp. ocellaris



Erebia euryale
ssp. ocellaris

THE ARRAN BROWN

Erebia ligea ssp. *carthusianorum* Frhst f. *nikostrate* Frhst.

The largest species to be found in the Alps and eastern mountains of the Balkans with distinctive broad brick-red bands on both upper and lower hind-wings with chequered white and brown fringe (cilia) hairs around the edges of both wings. The underside of the hind-wings displays a variable white streak. This form of a widely distributed subspecies found in the Dolomites has less developed markings with small black spots in the upper side of the fore-wing.

Habitat: Woodland edges and heavily overgrown wasteground amongst trees at sub-alpine levels.

Average Altitude: 800 - 1,500 m.

THE LARGE RINGLET

Erebia euryale ssp. *ocellaris* Stdgr.

This is a very variable and unstable subspecies to be found in many sheltered pasture areas throughout the Dolomites. Many specimens may be found without any clear markings and will appear to be entirely black or deep brown. Notable features are the chequered white and brown cilia around the wing edges and the presence of a whitish disconnected band on the underside of the hind-wing which is similar to *ligea* but always less pronounced.

Habitat: Sheltered but open pastures and wasteground principally at sub-alpine levels.

Average Altitude: 1,200 - 1,800 m.

THE YELLOW-SPOTTED RINGLET

Erebia manto ssp. *mantoides* Esp.

This species is as equally variable and unstable in markings as *euryale*. This subspecies is smaller than either *ligea* or *euryale* and sometimes displays reduced black apical spots. Males often display a distinctive series of bright orange spots or disconnected band on the underside of the hind-wing; sometimes these may be absent or reduced to one spot (f. *pyrrhula* Freyer). Females are generally paler and display a broad series of yellow or whitish spots on the underside of the hind-wing. This butterfly can be very common in undisturbed wasteground areas and pastures with long grass, and often flies with other species similar in appearance. This fact may cause some difficulties over identification on the wing and a small collection from certain districts may be necessary to authenticate identity.

Habitat: Open but sheltered areas of pasture and wasteground with a propensity towards damp patches of long grass and alpine flora.

Average Altitude: 1,000 - 1,800 m.



Erebia manto
ssp. *mantoides* f. *pyrrhula*



UNDER SIDE
C

Erebia manto
ssp. *mantoides* f. *pyrrhula*



Erebia manto
ssp. *mantoides* f. *pyrrhula*



THE BLIND RINGLET

Erebia pharte ssp. thynias Frhst.

A widely distributed subspecies within high exposed mountain grassland and pastures above the treeline. Easily identified by the presence of a distinctive band of blind orange dashes and spots on the upperside of both fore and hind-wing with a similar pattern on the underside. The band may be reduced in some species but is rarely absent. This subspecies is often small at high altitudes.

Habitat: High open alpine grassland above treeline and sometimes scree bases.

Altitude: 1,800 - 2,500 m.

THE LESSER MOUNTAIN RINGLET

Erebia melampus Fuesslin

A small but widely distributed species with a disconnected brick-red band containing a few apical black points on the fore-wing upperside; the hind-wing also displays a few simple reddish spots with black points. The underside of each wing is similarly marked. The fore-wing often appears to extend beyond the width of the hind-wing.

Habitat: Open pastures and grassland.

Average Altitude: 1,000 - 2,000 m.

THE SCOTCH ARGUS

Erebia aethiops ssp. salaria Frhst.

A velvety-brown medium-sized species with bright red band on the upperside of the fore-wing containing two closely connected spots further down. The hind-wing upperside also contains a series of reddish patches with white pupilled black spots. The hind-wing often appears scalloped in shape. The underside of the hind-wing lacks the reddish band or patches, but does display white pupilled blackpoints within a light greyish band.

Habitat: Sheltered areas of open pasture and scattered coniferous woodland in sub-alpine levels.

Average Altitude: 800 - 1,500 m.

THE WOODLAND RINGLET

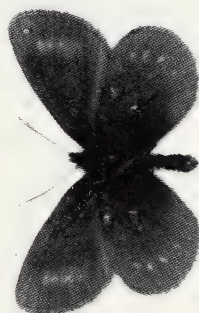
Erebia medusa ssp. dolomitica Warren

This subspecies appears to be widely distributed in the Dolomites. The fore-wing upperside displays two closely connected apical small spots with white pupils surrounded by a narrow rust coloured patch. A third small spot is also usually present further down the fore-wing. The hind-



UNDERSIDE

Erebia ligea
ssp. *carthusianorum*

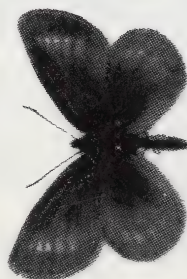


UNDERSIDE

Erebia pharte
ssp. *thynias*



Erebia ligea
ssp. *carthusianorum*



Erebia pharte
ssp. *thynias*

wing upperside also displays a series of small spots sometimes enclosing white pupils. The general brown colour on both sides of the wing is less intense and paler in shade than displayed by other similar species.

Habitat: Sparsely wooded pastures and waste ground areas at sub-alpine levels.

Average Altitude: 1,000 - 1,500 m.

THE SILKY RINGLET

Erebia gorge f. *triopes* Spr. and f. *elisabethae* Warren

A very variable species generally found above 1,800 m in local colonies in grass slopes adjoining scree and glacial moraines. The broad reddish band on the fore-wing is silky in appearance and accommodates two to three black spots of variable size with white pupils. The hind-wing upperside displays a less prominent reddish band with a few black spots, although these may not always be present; the hind-wing underside displays a brown mottled background. In the Dolomites the better developed form *triopes* with three fore-wing spots appears to be more widely distributed in the Southern region, whereas the less developed form *elisabethae* with only two very small fore-wing spots and a broader reddish patch is perhaps confined to the Central and Northern regions. This is a local species with an uncertain distribution in the Dolomites because of its remote habitat conditions.

Habitat: Rough grassy slopes and stony ground around scree etc. at high altitude levels.

Average Altitude: 1,800 - 2,500 m.

THE SWISS BRASSY RINGLET

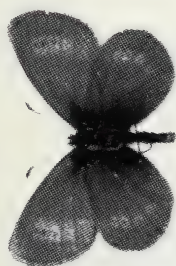
Erebia aquitania ssp. *dolomitensis* Warren (synonym. *E. tyndarus dolomitenses* Warren).

This subspecies is also found at high altitudes in similar habitats to those of *gorge*, and is the subject of much entomological argument as it belongs to a very unstable group. It is not easy to identify on the wing because of its relatively small size and the silvery grey mottled colour of the hind-wing underside.

This appearance can lead to confusion with *pandrose* which often flies with this butterfly. However, the fore-wing upperside has a well developed reddish tapering band with two small apical spots often containing white pupils. The hind-wing upperside also contains a variable reddish patch which may have black spots present. A careful study of specimens found is necessary in order to authenticate identity.

Habitat: High open alpine pastures and base screes and rocky moraines.

Average Altitude: 1,800 - 2,500 m.



10015. 66
4

Erebia melampus
ssp. *melampus*



7

Erebia aquitania
ssp. *dolomitensis*
(syn. *tyndarus dolomitensis*)



4

Erebia melampus
ssp. *melampus*



7

Erebia aethiops
ssp. *salaria*

THE BRIGHT-EYED RINGLET

Erebia oeme ssp. noctua Frhst.

This subspecies is very dark and almost unmarked with a greenish silky texture to the fore and hind-wing uppersides. Occasionally two small apical spots with pin-point white pupils are present on the fore-wing underside with a similar series on the hind-wing underside. The hind-wing can sometimes display a series of three or four vestigial spots enclosed within small brick red patches; these are often absent or almost so. Often found together with *euryale* and *manto*.

Habitat: Similar areas to those described for *manto*.

Average Altitude: 1,000 - 1,800 m.

THE DEWY RINGLET

Erebia pandrose ssp. marmolata Dannehl.

This subspecies is very common on high open pastures throughout the Dolomites and differs from the nominate species found elsewhere in the Alps by its relative smaller size and less distinct markings on the fore-wing upperside. The silvery-grey mottled colour of the hind-wing underside with two dominant wavy bands should make this butterfly easy to identify when resting on the ground. In favourable areas this butterfly will breed in large numbers and is likely to be encountered frequently throughout the region.

Habitat: High alpine pastures with light scrub and conifers as well as exposed grassy slopes and scree edges.

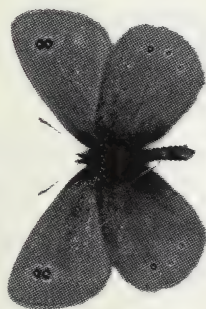
Average Altitude: 1,600 - 2,500 m.

Check List of Erebiinae recorded in regions of the Dolomites (N.E. Italy) between 13 and 22 July 1985.

	Regions:								
	1	2	3	4	5	6	7	8	9
<i>Erebia ligea ssp. carthusianorum</i> (Arran brown)					*				
<i>Erebia euryale ssp. ocellaris</i> (Large ringlet)		*			*			*	
<i>Erebia manto ssp. mantoides</i> (Yellow-spotted ringlet)					*				
<i>Erebia pharte ssp. thynias</i> (Blind ringlet)	*		*	*	+	*	*		*
<i>Erebia melampus</i> (Lesser mountain ringlet)			*			*	*		
<i>Erebia aethiops ssp. salaria</i> (Scotch argus)									
<i>Erebia medusa ssp. dolomitica</i> (Woodland ringlet)	*		*	*	*				*
<i>Erebia gorge f. elisabethae</i> and <i>f. triopes</i> (Silky ringlet)								*	*
<i>Erebia acquitania ssp. dolomitensis</i> (syn. <i>E. tyndarus dolomitensis</i>) (Swiss brassy ringlet)			*						
<i>Erebia oeme ssp. noctua</i> (Bright-eyed ringlet)					*				
<i>Erebia pandrose ssp. marmolata</i> (Dewy ringlet)	*		*	*	+	*	*	*	*

+ = above 1,800 m.

Region 1. Aschkler Alpe/Cisles Alpe (S. Cristina Val Gardena) (Sudtiro) (2,000 - 2,400 (2,000 - 2,400 m.))



UNDER SIDE

Erebia medusa
ssp. dolomitica



UNDER SIDE

Erebia oeme
ssp. noctua



Erebia medusa
ssp. dolomitica



Erebia oeme
ssp. noctua

- Region 2. Val Lunga (Sudtirol) (1,900 m)
 Region 3. Alpe di Suisi (Sudtirol) (1,900 - 2,000 m)
 Region 4. Passo di Sella (Sudtirol) (2,200 m)
 Region 5. Molino (Belluno) (1,200 - 1,500 m)
 Région 6. Val di Venegiotta (Passo di Rolle) (Trentino) (1,700 m)
 Region 7. Fedare (Passo di Giau) (Belluno) (2,000 m)
 Region 8. Laghi di Colbricon (Passo di Rolle) (Trentino) (1,900 m)
 Region 9. Le Campagnaccia (Passo di S. Pellegrino) (Trentino) (2,000 - 2,500 m)

Some Further Observations and Conclusions

First, it has to be said that my Check List is not to be treated as exhaustive; although it does represent a comprehensive list of the more widely distributed species to be found throughout the Dolomites, there are a limited small number of other species which are to be found in districts lying elsewhere in the north and east. Because of the remoteness in character of some of the central and southern massifs there is a possibility that a hitherto unrecorded species could be discovered in a restricted area; an interesting but daunting prospect for some intrepid entomologist with mountaineering experience?

Secondly, sunny weather conditions are of paramount importance if any sustained field study work is to be carried out with success, as these montane species will only fly around and frequently settle on low foliage whilst the temperature is warm. In cold and wet conditions these butterflies will readily disappear into scrub and dense grass and are very difficult to locate. I did discover, however, that colonies of *euryale*, *manto* and *oeme* often congregate in large numbers in the late afternoon on warm sunny days around sheltered corners of meadows and wasteland before roosting together on long blades of grass; at this stage these butterflies can be studied closely and photographed with ease. *pharte* and *pandrose* which are only found above the tree-line at altitudes rarely below 1,600 m appear to display similar roosting behaviour in sheltered pockets and marshy areas around scree bases and mountain streams.

My all too brief visit has confirmed to me that this beautiful and peaceful alpine region is one of the most rewarding montane areas in which to study this interesting genus which is so easily dismissed as a group of dull, brown butterflies.

REFERENCES

- WARREN, B. C. S. (1936) *Monograph of the Genus Erebia*. BM(NH) London.
 WARREN B. C. S. (1981) *Supplement to Monograph of the Genus Erebia*. E. W. Classey, Faringdon.
 HIGGINS, L. G. and RILEY, N. D. (1980) *A Field Guide to the Butterflies of Britain and Europe*. 4th Ed. Collins, London.



Erebia gorge



UNDERSIDE

Erebia gorge

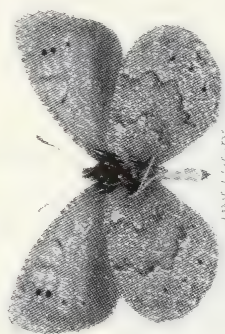


Erebia gorge
ssp. *gorge* f. *elisabethae*



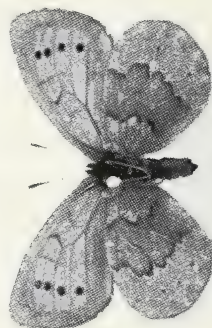
UNDERSIDE

Erebia gorge
ssp. *gorge* f. *elisabethae*



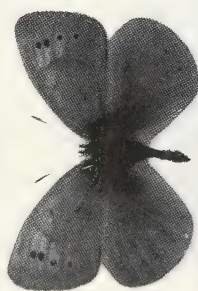
UNCLESIDE

Erebia pandrose
ssp. *marmolata*



UNDERSIDE

Erebia pandrose
ssp. *marmolata*



Erebia pandrose
ssp. *marmolata*



Erebia pandrose
ssp. *marmolata*

BOOK REVIEW

The insects of Thorne Moors by Peter Skidmore, Martin Limbert and Brian C. Eversham. The Sorby Record: Supplement 23, 1985. A5 pp.89 - 153. Sorby Natural History Society 1987. Price £2.00 (p&p inclusive) from M. Limbert, 23 Brockenhurst Road, Hatfield, Doncaster DN7 6SH.

Thorne Moors is largely situated in Yorkshire, but extends eastwards into Lincolnshire. It is an area of about 1200 hectares, the majority of it being a nature reserve of the Yorkshire Wildlife Trust.

The book starts with an account of the history of recording on the reserve, followed by a summary of the habitats to be found. There are 39 pages of lists of species recorded on the reserve and these cover the orders Ephemeroptera, Odonata, Orthoptera, Psocoptera, Hemiptera, Homoptera, Thysanoptera, Megaloptera, Neuroptera, Lepidoptera, Mecoptera, Trichoptera, Diptera, Hymenoptera and Coleoptera. The authors should be congratulated on producing an up-to-date account of the area in that recent publications have been taken into account, such as the beetle *A. elegans* Dej., previously having been listed in error, is confirmed by recent evidence.

The check list provides an up-to-date nomenclature, with each name followed by the date of last capture. The Society should be congratulated on producing a very high standard account for the very low price of £2.00, which includes the postage, unlike a large number of recent expensive local lists.

C. C. Penney.

BOOK ANNOUNCEMENTS

by The Editor.

The London Natural History Society is very generously giving our members the opportunity to purchase their latest publication at a reduced price when ordered now prior to its appearance. The book, and it is a hardback, is:—

THE BUTTERFLIES OF THE LONDON AREA by Colin W. Plant, FRES. It is intended that this book will be the definitive work on the London area butterflies and will complement the Society's similar works already published on the birds and flora of our Capital City. The book will consist of about 200 pages and will be illustrated in colour, including (and this seems a useful innovation) the tetrad distribution maps in two colours. The area covered is a twenty-mile radius from St Paul's Cathedral and therefore takes in parts of the following counties: all London Boroughs and all Middlesex, large parts of Hertfordshire, Essex, Kent, Surrey, and even a small portion of Buckinghamshire. Practically every species of British butterfly has been recorded from this area at some time or another and the book should therefore be of interest

to more than just the Londoner. The author, Colin Plant, is an active entomologist, has served over the years in various capacities in the running of the LNHS in whose Journal he regularly publishes and is employed at the Passmore Edwards Museum as their Natural Historian.

The book is octavo in size (9 x 7½ in.) and the concessionary price is £12.45 which *includes postage*. After publication there will be an extra £3.50 to pay, so order now.

Advance orders for the book, stating that you are an AES member, should be sent to the LNHS at 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP. Cheques should be made payable to the LNHS.

The above book is clearly reasonably priced and should be affordable to anyone interested. Not so affordable, unfortunately, is a magnificent tome published in Germany, *Die Bombyces und Sphinges der Westpalaearktis* by Josef J. de Freina and Thomas J. Witt. The price of this is DM460 which at the current rate of exchange is about £150 — and this is only the first volume! For this price you do get some 700 pages and 52 coloured plates, all to full A4 size and the sample plate we have seen really is superb. The series is clearly intended to be a definitive work (as is our own *Moths and Butterflies of Great Britain and Ireland*) that will stand the test of time and be of use for many a decade.

This first volume covers all the families traditionally placed in the Bombyces and will of course be of use to anyone collecting from the Atlas Mountains of Africa to the Urals of Russia. It is unfortunate that it is in German, which far too few of us can read, and in view of the fine colour plates there seems to us to be a clear case of following the tradition of 'Seitz' and publishing editions in three (why not more?) languages.

Also dealing with the Bombycidae, but this time from the other side of the world, is the fifth volume of *The Moths of Borneo* by J. D. Holloway which is due for publication this year.

As we go to press we hear that a biography of the late F. W. Frohawk has been published. This is by June Chatfield, and the price is £17.50. No further details are available.

After a gap of three years the CUP has come out with numbers five and six of their *Naturalists' Handbooks* series. These are *Hoverflies* by Francis Gilbert 72pp price £15.00 hardback, £4.50 paperback), and *Bumblebees* by Oliver Prys-Jones and Sarah Corbet (96pp, 4 coloured plates, price £15.00 hardback, £5.95 paperback). Rather late in the day, after a spate of excellent books that have already appeared on them, is the seventh volume in the series *Dragonflies*, which we understand is also due to be published this year and at £18.00 for the hardback definitely on the dear side compared with its peers, particularly in view of its paucity of coloured illustrations. Indeed an increase in the hardback price from the £8.00 of three years ago represents an inflation rate of 25% per year,

rather hard to reconcile with Mrs Thatcher's claims of its only having been of the order of 5 - 6%! Even worse, however, is the appalling quality of the hardback, since, at least in the *Hoverflies* (we have not examined the others) it is not actually a hardback, it is the paperback version metal stapled onto a piece of paper glued across the boards of the cover. In one brand new copy we inspected in a shop the top staple had already pulled loose. In fact the only difference between the stapled paperback in card covers and the stapled hardback would seem to be in the thickness of the cover, not the quality of the binding. Quite frankly this is just not good enough for an additional price of £10.50.

As with the previous volumes in the series, the production belies the text, which is an excellent exposition of the subject for the intended market of teachers, students and non-specialists desiring to know something about a particular group of insects without too much detail and at the paperback price the series are useful buys.

Visiting Durham we came across a recent publication of the Northern Naturalists' Union which very favourably impressed us. This is *The moths and butterflies of Northumberland and Durham; Part 1: Macrolepidoptera* by T. C. Dunn and J. D. Parrack. A substantial A5 paperback of 284 pages; well-printed and with a number of distributional maps but no illustrations. While we only had time for a quick browse, from the number of pages it is clear that the subject is thoroughly dealt with and what was so encouraging was to note the number of species that had become commoner, or spread recently, to the area covered. While in Durham we saw a number of the local moths and were very struck at how dark and handsome many of them were compared to those seen down here (Cambridge) and further south.

While we intend to publish a full review of this in due course, for those who cannot wait, it is available now at a price of £7.00 only (inclusive of postage). Cheques payable to Northern Naturalists' Union should be sent to: T. C. Dunn, The Poplars, Durham Road, Chester-le-Street, Co. Durham,

A SWALLOWTAIL IN SUSSEX

by E. Jackson

On Friday July 3 1987 a fellow student brought to my daughter, in her school grounds at Mapleherst, Hastings, a butterfly which she at once identified as a Swallowtail (*Papilio machaon*). She held it for a while in her hands and although it was in good condition it was clearly very weak and since it did not fly away she placed it on nearby vegetation from which it had gone by the next day when she took me to the spot.

AN ACCOUNT OF THE PHASMID *BACILLUS CYPRIUS* UVAROV (PHASMIDA, BACILLIDAE) WITH EMPHASIS ON DISTRIBUTION

by Paul D. Brock (4792)

The stick insect *Bacillus cyprius* was described by Uvarov in 1936, and is the only Phasmid recorded from Cyprus so far.

A holiday in Cyprus (May/June 1985) enabled me to research the species in some detail, and build up a picture of the distribution.

GENERAL COMMENTS ON *BACILLUS*

The genus *Bacillus* St. Farg and Serville is well represented by species in North Africa and Europe, Some of these reproducing by parthenogenesis (males completely absent in most species). All species are stick-like, wingless and fairly similar in appearance, occurring in various shades of green or brown, which often match the surroundings. Localities are often very near the coast at low altitude. It is fairly easy to locate specimens on or near their foodplants during the daytime, or they can be best found in darkness when feeding. They are rarely abundant, and can be very localised.

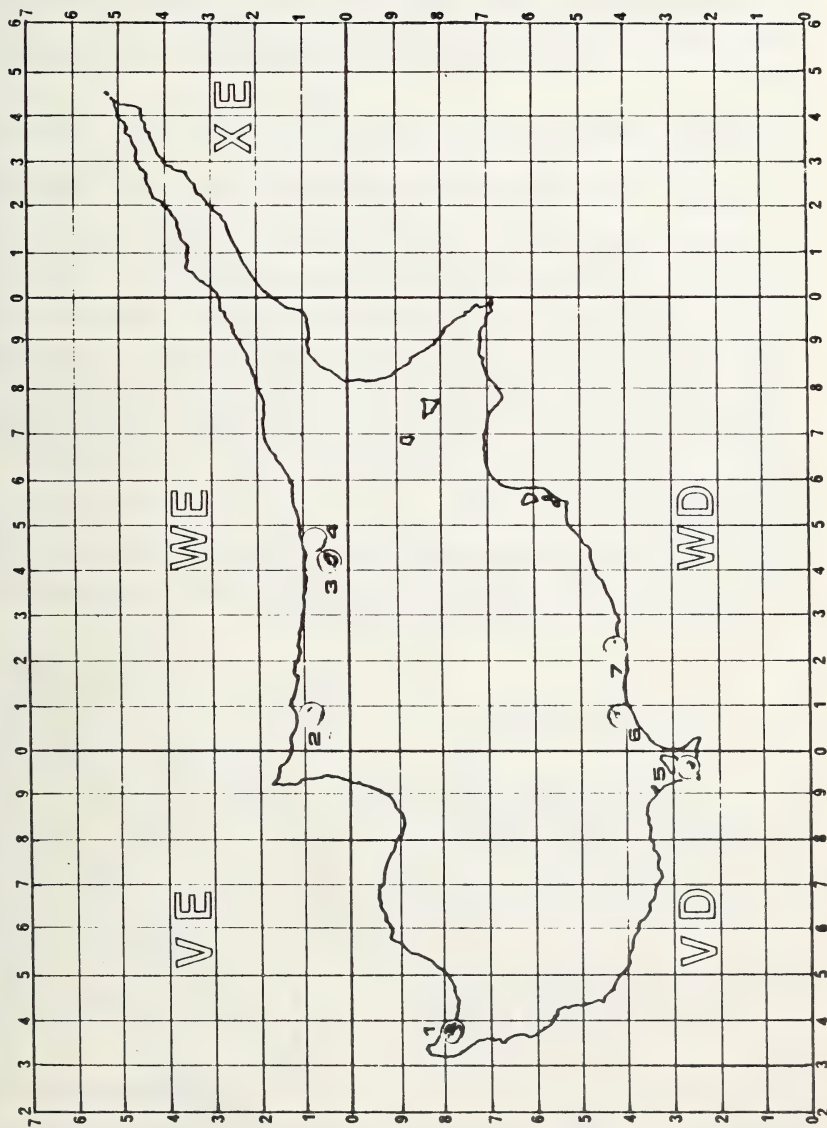
Bacillus rossius is the commonest species, being very widespread in Europe and North Africa, and known by a number of sub-species.

Whilst Uvarov correctly referred to *Bacillus cyprius* being allied to *Bacillus atticus*, he places an emphasis on the intermediate femur bearing a pair of subapical round lobes near the apex of the upper side. This is rather misleading, as the lobes are absent on the vast majority of specimens. The key to *Bacillus* species as referred to in Harz and Kaltenbach therefore requires clarification on this point, although the key is somewhat outdated now, due to the locating of new species following research by Italian workers. Scali has studied the various *Bacillus* species with other workers, and has suggested that there are two groups of related species within the genus. The "*Bacillus grandii*" group and the "*Bacillus atticus*" group. *Bacillus cyprius* is in the *atticus* group which all reproduce by means of thelytokous parthenogenesis. The group's main foodplant is Lentisc (*Pistacia lentiscus* L.) whereas the *grandii* group favour bramble (*Rubus*) and other Rosaceae. However, some populations of *Bacillus lynceorum* and *B. rossius* are known to feed on Lentisc.

The *Bacillus grandii* group is constituted as follows:—

1. *B. rossius* (Rossi). The males 53-79mm, the females 68.5-102mm. This species is very widespread in Europe and North Africa. It is bisexual with the males commoner in some of the more southern localities, but in many areas it is absent.
2. *B. grandii*; Nascetti and Bullini. The males 52-62mm, the females 71.3-95.8mm. Bisexual and found in parts of southern Sicily.

CYPRUS 1:1,000,000 U.T.M



3. *B. whitei*; Nascetti and Bullini. The females 76.0-90.1mm. Females only known and also only found in parts of southern Sicily.
4. *B. lynceorum*; Bullini and Nascetti. The females 82.1-115.5mm. Females only known and also only found in parts of southern Sicily.

The *Bacillus atticus* group consists of females only and is constituted as follows:—

1. *B. atticus* Brunner, 60-83mm. Found in parts of Greece, Yugoslavia and Italy.
2. *B. diplocarius* Scali and Mantovani. A species from South-west Turkey.
3. *B. carius*; Scali and Mantovani. Also from South-west Turkey.
4. *B. rhodius*; Mantovani and Scali is found in Rhodes.
5. *B. cyprius* Uvarov. Size 79-87mm and is to be found in Cyprus.

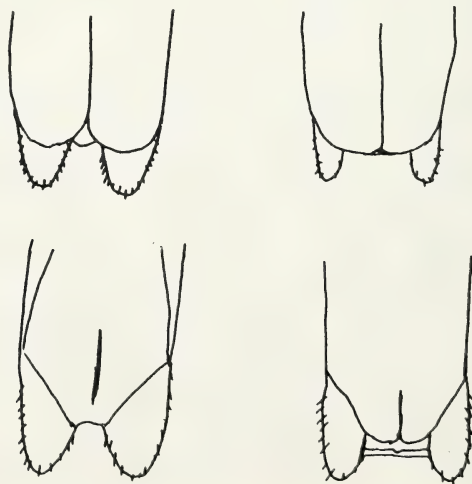
Major differences between the two groups are the size and shape of the 'lamina subgenitalis', also cerci and thorax granulations of the female.

Scali and other workers in the genetics field have recorded egg and karyotype differences for the various species in the *B. atticus* group.

BACILLUS CYPRIUS Uvarov

Brief description:—

Type 81mm; antennae 8, pronotum 3.5; mesonotum 15; metanotum 15; median segment 2.5; anterior femur 22; anterior tibia 25; median femur 15; median tibia 17. Antennae with 24 segments.



CYPRIUS

ATTICUS

CERCI DIFFERENCES

Other specimens recorded — ranging in length from 79-87mm. General colour — various shades of brown, or occasionally green. Granulations on thorax and abdomen, but a generally smooth appearance (granulations not so excessive, or clearly visible as in *atticus*). Cerci — short, round ended, and similar to *atticus*, but cerci as already noted by Scali much wider in *cyprius* — see sketch.

Notes on coloration in the wild:—

Three adult specimens found by me near Governor's Beach (several miles from Limassol) on 7 June 1985.

Two brown examples 86mm and 87mm. Uniform colour dark brown with a hint of pale red. Red areas under fore-femora.

One green specimen 80mm. Medium green, with a darker green central longitudinal stripe along abdomen. A few mm either side of the central stripe occurs dark reddish stripes from head to abdomen, partly broken. Stripes end at third abdominal segment. Normal side stripes dark red. Antennae reddish brown. Fore legs red and brown. Mid and hind legs — joint dark brown, then legs reddish to light green. Red area under fore-femora. In captivity this specimen lost some of its reddish coloration.

As previously mentioned Uvarov emphasises the fact that on the type the intermediate femur bear a pair of round lobes near the apex of the upper side. This is not a constant feature, and the only other specimen I know of with these lobes and spines is one found by Scali in Northern Cyprus.

FOODPLANTS

Lentisc *Pistacia lentiscus* favoured.

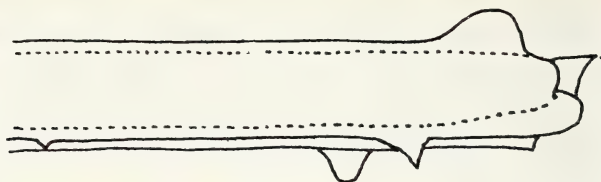
One adult was found feeding on bramble *Rubus* by Scali. The resulting offspring refused bramble.

As with other Phasmida it is sometimes possible to transfer some of the insects to alternative foodplants, once they are established on their main foodplant. I transferred a second instar *cyprius* nymph to bramble in early 1986, and it also nibbled *Eucalyptus gunnii* leaves (after I lost many nymphs due to contaminated Lentisc leaves). The newly-hatched nymphs refused to eat bramble leaves.

Pine, e.g. *Pinus halepensis* L. needs researching as a foodplant in view of the record at the Department of Agriculture, Cyprus (see below).

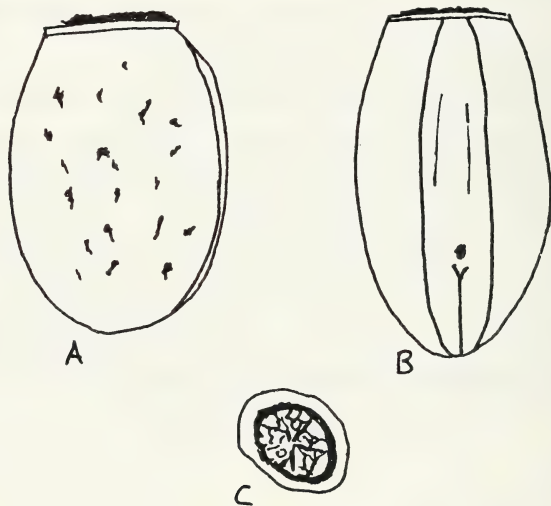
REARING NOTES

My adults died within a month of returning from Cyprus, but they had probably laid most of their eggs. I would estimate that they lay several hundred eggs each, which in my experience, hatched in approximately two months at an average 75°F, after being kept in slightly moist sand.



Bacillus cyprius — Apical part of the median femur viewed from behind.

Type specimen — per Uvarov. Lobes and spines *absent* from most specimens.



E g g A Lateral view
B Dorsal view
C Operculum

Brown, with variable number of markings on capsule. Operculum black.

A little short of 3mm x 2mm.

Like the adults, eggs of other species in the '*B. atticus* group' are very similar in appearance.

I kept the insects dry in an airy cage at approximately 70° - 80°F. Lentisc is a difficult plant to obtain in Britain, but it lasts two to three weeks in water.

Further information is needed on the life cycle in Cyprus, but in captivity insects can grow slowly i.e. take around eight months to mature. It is considered that there is one generation in the wild, but a second generation for overwintering specimens (nymphs) appears to occur occasionally.

DISTRIBUTION

The list below is split into the political regions, following division of the island in 1974.

TURKISH part of the island

Northern Cyprus		
British Museum	HALÉVGA Type 81mm 31.5.31	Map Ref. 3
(Natural History)	Collected by H. M. Morris — another example 1.5.37 Morris.	
Cyprus National Museum (Housed at Ministry of Agriculture and Natural Resources, Department of Agriculture, Nicosia).	HALÉVGA, Pentadaktylos range 2980 ft on Aleppo Pine <i>Pinus halepensis</i>	3
	4.12.38. Collected by H. M. Morris	
Prof. Valerio Scali	GECITKÖY (near Panagra)	2
(Personal correspondence)	KARAAGAC (near Halévga Forest)	3
	ESENTEPÉ	4
	— Second half of September, 1984. A number of specimens found on Lentisc from second instar to adult.	

GREEK part of the island

Northern Cyprus		
Prof. Valerio Scali	APHRODITES BAY, POLIS — end of May 1984.	1
(Personal correspondence)	One adult found on bramble, which it continued to eat in captivity.	
Southern Cyprus		
Les Fox	AKROTIRI Air-port base area, nymphs noted approx. 1968 on un-named bushes.	5
(Personal correspondence)	Possibly also at other Airport bases.	
BM (NH) Additional examples not kept in main drawer.	AMATHUS 3 adults 85mm, 82mm, 79mm 25.4.47, 1 large nymph 22.4.47, 2 small nymphs 14.11.47 — all collected by G. A. Mavromoustakis.	6
Natural History Museum, Limassol, Cyprus — housed near Limassol Zoo.	AMATHUS 2 adults 24.4.35	6
Paul D. Brock	Mavromoustakis	
	Nr GOVERNOR'S BEACH.	7
	3 adults 87mm, 86mm, 80mm, 7.6.85 feeding on isolated Lentisc bushes near agricultural land.	

NB. Place names on the Turkish side of the Island have changed from time to time, and there may be variations in the spellings. The type locality was originally spelt Halevga.

Mr H. M. Morris was Government Entomologist, and Mr G. A. Mavromoustakis, based at Limassol, was the outstanding indigenous collector. Many of his wildlife specimens are housed in the British Museum (Natural History).

An unconfirmed record of *Bacillus cyprius* was mentioned to me by staff at the Department of Agriculture, Nicosia. A visitor to Cyprus noted a stick insect on 'canes' near the Akrotiri Salt Lake in 1983. I made an extensive search of the area, and only saw stick-like grasshoppers of various species, together with many frogs! I would comment that it is possible the insects would rest on grasses or canes near their foodplants, but a mis-identification is likely here, noting that other insects such as



BACILLUS CYPRIUS on Lentisc.

See 'cerci differences' to distinguish from *Bacillus atticus*. This insect is very similar in general appearance to other species of the '*B. atticus* group'.

grasshoppers and mantids resemble sticks. I was unable to locate Lentisc in the Salt Lake area.

An extensive search of suitable coastal localities may reveal further localities, but in view of the relatively few specimens recorded to date, the species may be sparse but diffused. I searched various localities near Amathus without success, and elsewhere on the Island.

RESEARCH

Scali has found that the egg, the chromosome number and the karyotype are distinct in *atticus* ($2n = 34$) and *cyprius* ($2n = 32$). Papers have been published on the relationship of the various *Bacillus* species which is still the subject of considerable research.

ACKNOWLEDGEMENTS

My thanks in particular to Professor Valerio Scali for providing helpful information and kindly reading a draft of this paper, also to Dr John Ph. Zyngas and Ioannis Melifronides from the Department of Agriculture, Nicosia, for their hospitality in Cyprus.

REFERENCES

- BROCK, P. D. (1984) *European Stick Insects*. The Phasmid Study Group, March 1984.
- BROCK, P. D. (1985) *The Phasmid Reeler's Handbook*. The Amateur Entomologists' Society, Feltham.
- HARZ, K. and KALTENBACH, A. (1976) Die Orthopteren Europas — (The Orthoptera of Europe) *Series Entomologica* Vol. III, W. Junk, The Hague.
- MANTOVANI, B. and SCALI, V. (1985) L'uovo di tre specie di *Bacillus* (Insecta Phasmatodea) del Mediterraneo orientale al microscopio elettronico a scansione *Atti XIV Congr. Naz. Ital. Entomol.*, Palermo 28/5 — i/6/1985.
- MARESCALCHI, O., CORNI, M. G. and SCALI, V. (1985) I cromosomi di tre specie di *Bacillus* (Insecta Phasmatodea) del Mediterraneo orientale *Atti XIV Congr. Naz. Ital. Entomol.*, Palermo 28/5 — i/6/85.
- SCALI, V. and MANTOVANI, B. (1985) Distribution and phyletic relationships of specific and subspecific taxa in the olomediterranean Genus *Bacillus* (Insecta Phasmatodea) In G. Danieli (ed.) *Facets of ecological genetics*. Padua (in press).
- UVAROV, B. P. (1936) New Orthoptera from Cyprus *Annals and Magazine of Natural History* 18 : 505-506.

MACROPHOTOGRAPHY

by Phil Bragg (8737)

The AES booklet *Insect photography for the amateur* is an excellent one but does have one omission which can be expensive for the beginner. The booklet suggests that a series of trial exposures is necessary to find the correct positioning of flash units and aperture settings. This involves using and processing quite a lot of film. It is, however, unnecessary.

Some time spent in the local library and a struggle with a few equations and I produced two useful formulae. I have since confirmed their reliability in the obvious way!

The first of these is:—

$$\text{Distance of flash from subject} = \frac{\text{Guide No}}{f. \times (M + 1)}$$

f. is the aperture (always use either f16 or f22, otherwise the depth of field will be too small)

M is the magnification (= image size/object size) being used and this is determined by focussing onto a ruler (object); image size is the film size.

Remember the Guide No. of the flash unit varies with the flash speed and is usually given in metres or feet. I find the most convenient way of using the formula is to plot a graph of distance against magnification for each file speed. This means that a quick glance is all that is needed (provided you know the magnification that your bellows or rings give you), to tell you where to place the flash unit.

The second formula is for two flash units with the same guide numbers:—

$$c = \frac{1}{\sqrt{\frac{1}{a^2} - \frac{1}{b^2}}}$$

a = the flash distance for a single unit, which is found using the first formula.

b = the distance you have actually placed one of the units.

c = the calculated position of the second unit.

As this is complicated to work out, I always have one unit twice the distance of the first unit ($c = 2b$). So $a = 1$; $b = 1.12$; $c = 2.24$. In this case 'a' has been found by the first formula, so multiply by 1.12 to give the distance of the closest unit and double this for the second unit.

If your two units do not have the same guide number then I cannot help you! Finally, if using a 50mm lens and do not possess a reversing ring, then get one; they are excellent value.

DRAGONFLIES VISITING THE DOGWOOD BUSH

by Peggie Pittkin

I was most interested to read the article by Jan Koryszko (*Bulletin* 46 : 81) about lepidoptera on the dogwood bush.

Living on the banks of the Avon and having a large bush of it in my garden, I find it is extremely popular with damselflies. The two *Calopteryx* species, *splendens* and *virgo* visit it regularly on days when the sun is shining.

WILDLIFE SITES IN SUSSEX — HELP WANTED

The Sussex Trust for Nature Conservation is sponsoring a UK 2000 scheme to identify urban wildlife sites in and around Crawley, Worthing and Hastings. Any relevant survey information is required and any AES members who might be interested to help with the project are cordially invited to get in touch with the Team Supervisor, Brigid Jarzembowski, Woods Mill, Henfield, West Sussex BN5 9SD. (Telephone: Henfield 492630.)

SOME OBSERVATIONS ON BUTTERFLIES IN SWITZERLAND AND IN FRANCE DURING THE SUMMERS OF 1984 AND 1985.

by Peter W. Cribb (2270)

I made trips in 1984 and 1985 through France to the Swiss Engadine, in 1984 from 13th to 27th July and in 1985 from 21st July to 4th August. I was accompanied by our members Russell Bretherton and David Marshall and in 1985 Martin Gascoigne-Pees joined the party. On both trips we were dogged with indifferent weather, particularly in 1985 when rain eventually drove us home earlier than we had intended. However we were able to explore widely and make several interesting observations which are worth recording. These are best considered species by species rather than by giving one of my more "travel-log" reports of previous years.

THE YELLOW-BANDED RINGLET *Erebia flavofasciata* Heyne

This was my main quarry in the Engadine as I had missed it in previous years on the Campolungo Pass above Fusio in Ticino, due to heavy cloud. Despite searching both the Val Roseg and Schafberg above Pontresina in 1984 we did not find it and assumed that the lateness of the season meant that it was not yet on the wing. On 23rd July, 1985 we made a stop on the Julier Pass, above St Moritz, and on climbing up high on the slopes below the crags we found the butterfly commonly, being as abundant as the Mountain ringlets (*E. epiphron*) with which it was flying. Both sexes were present and showed some variation on the under-side. Going on, to the slopes below the glacier in the Val Roseg. I caught only three worn females, although we were only a week later than in the previous year.

THE SOOTY RINGLET *Erebia pluto* de Prun.

We took this on both the Julier and Albula passes on the 24th and 27th July, 1985. They were flying over rocky slopes high up and were all of the large ssp. *pluto* form. In previous years I have observed this species ovipositing on rocks.

THE STYGIAN RINGLET *Erebia styx* Freyer.

This was discovered by Martin on the rock-strewn slopes above a stream at the foot of the Ofen Pass. This large species was first incorrectly identified as *E. pronoe*. We took both males and females as they came to a damp pathway running across the slope. Pursuit across the rocks was too hazardous.

THE MOUNTAIN RINGLET *Erebia epiphron* Knoch.

All examples taken on the Julier, Albula, Ofen and Fluella passes were poorly marked and small, referable to ssp. *aetheria* Esper, many of the form *nelamus* Bdv.

THE SILKY RINGLET *Erebia gorge* Huebn.

We found this on all the high screes visited, including the Val Roseg. It is a most variable species, many being devoid of eye spots, f. *erynis* Esper, the range being such that it would not be possible to describe a racial form for the area. This indicates the dangers in describing an alleged racial form based on a small or selected number of specimens. It would seem better to refer to forms rather than races.

MNESTRA'S RINGLET *Erebia mnestra* Huebn.

This species was the commonest *Erebia* on the higher slopes of the Val Roseg on the 25th July, 1985, flying with the Swiss brassy ringlet (*E. tyndarus* Esper).

THE LARGE RINGLET *Erebia euryale* Esper

This was the most widespread *Erebia* of both trips, occurring at all but the highest altitudes, often dozens at a time drinking on seeps. In the Val Roseg the undersides of the females were quite striking, of the form *adyte* Hübn.

THE ARRAN BROWN RINGLET *Erebia ligea* L.

We found this in both sexes commonly at low altitude at the foot of the Ofen pass and in the woodlands along the Inn valley and then again in the Vosges Mountains on our return journey. They haunt the edges of woodland and clearings and were common in a forest ride below the Grand Ballon d'Alsace.

CYNTHIA'S FRITILLARY *Euphydryas cynthia* D & S.

On both trips we found this butterfly commonly on all the high passes, particularly the Albula and on the slopes of the Schafberg at Pontresina, where I found it *in copula*. The females laid single masses of eggs on Lady's mantle (*Alchymilla*) but the larvae subsequently preferred ribwort (*Plantago lanceolata*). They hibernated in a web at the foot of the plant and progeny from one batch raised by David fed up at differing rates in the spring and produced a staggered emergence from the end of June into mid-July. In all the areas where the butterfly was observed it was flying with the Marsh fritillary (*E. aurinia debilis* Obth.) and I watched a female of that species laying on a broad-leaved plant, rather like a plantain, which I was unable to identify. It certainly was not *Primula viscosa*, the foodplant stated by Higgins and Riley (1980).

THE ASIAN FRITILLARY *Euphydryas intermedia wolfensbergeri* Frey

On our first trip we found that this species was just emerging and I recorded three males in perfect condition. We hoped that on our second trip we should be able to take females for egg-laying, the foodplant being

the shrub honeysuckle growing in the coniferous woodlands in the Val Roseg. However on the 26th July, 1985 all the (badly-rubbed) females which we could net had already laid their eggs and in the wealth of bushes in the area I was not able to find any egg masses. A later trip might have discovered the larval webs which are easier to see. In this laying habit they mimic the Spanish race of Marsh fritillaries (*E. aurina* ssp. *beckeri* H-S.) and I found their larval webs to be quite conspicuous.

THE APOLLO *Parnassius apollo* L.

Only odd specimens, all males, were seen on the Julier, Val Roseg and the Ofen passes. We may have been too early for the main emergence.

THE SMALL APOLLO *Parnassius phoebus sacerdos* Stichel

The Small apollo was common on all the passes, flying along the sides of streams and commonest at the end of the Val Roseg below the glaciers and by the stream at the foot of the Ofen Pass. I made an interesting observation as I watched a female fly along the stream edge where clumps of its foodplant, the yellow mountain saxifrage (*Saxifraga aizoides*), were growing. It has always puzzled me that if the females laid their eggs on these plants, what happened to them in the spring, when the plants have died down and the spring melt rushes over them. The female settled on the foodplant, fed from the flowers and then flew off onto a largish rock above the plant. She crawled down the face of the rock and then, dipping her tail, she deposited a single egg on the underside of the rock face. If this is the customary place of laying, it would solve the problem, for the larvae, which hatch in the Spring, could crawl the short distance to the fresh growth of the saxifrage a few feet away. It would be of interest to know whether any similar observations have been made; it would also be interesting to know how the Clouded apollo (*P. mnemosyne*) oviposits as its foodplant, *Corydalis*, seems to have died back by the time the females are laying their eggs.

THOR'S FRITILLARY *Clossiana thore* Huebn.

We failed to find this butterfly in the Val Roseg in 1984, again presumably because of the late season but in 1985 it was reasonably common but badly worn on the 26th July, flying around the alder bushes above the restaurant. My only previous encounter with this species was on the Ludmanier Pass, Ticino. Its foodplant is said to be *Viola* sp. but it seems to associate itself with alder.

THE MOUNTAIN CLOUDED YELLOW *Colias phicomene* Esper

This species was common on all the passes visited, flying rapidly over the slopes. It lays its eggs freely on a blue flowered *Astragalus* growing on the flowery slopes, which may well be the main foodplant in this part of the Alps.

THE MOORLAND CLOUDED YELLOW *Colias palaeno* L.

Scattered specimens were seen on the Schafberg, flying over the scrub juniper and *Vaccinium* carpet and at a much lower altitude, just above the River Inn at the foot of the Albula Pass, Martin took a female flying in a woodland clearing where *Vaccinium* was growing.

THE CRANBERRY BLUE *Vacciniina optilete* Knoch

We found odd specimens of this in the Val Roseg, again flying over a *Vaccinium* carpet.

THE SILVERY ARGUS *Aricia nicias* Meig.

In the coniferous woodland of the Val Roseg this occurred in well-populated pockets where wood cranesbill (*Geranium sylvaticum*) grew. The *Geranium argus* (*Eumedonia eumedon* Esper.) was flying with it, using the same foodplant.

THE ZEPHYR BLUE *Plebejus pylaon trappi* Verity.

On our 1984 trip we returned from the Engadine via the Majola and then the Simplon Pass. We camped a night at Schallberg on the north side of the pass and netted specimens of this species, past their best. Searching the plants of the hairy-leaved *Astragulus excapus* we discovered a smattering of eggs and small larvae but the following day we had to abandon the camper van on the Swiss border, due to clutch failure, and most of the breeding material taken on the trip was lost.

THE PURPLE EMPEROR *Apatura iris* L.

This exciting butterfly was observed on both trips, from the French forests to the woodland bordering the Lake Orta in North Italy. There we captured a female which unfortunately had not been paired but I did find one egg laid on the willow *Salix caprea*. However on our 1985 return journey we returned via the Vosges Mountains and camped at Cernay. We observed the butterfly on the wing near Le Grand Ballon and on the journey from there towards Bar sur Aube we stopped in woods near the village of Couve. Here we found both eggs and first instar larvae. Again south of Bar we found them commonly in the forest, Martin recording twenty-eight eggs on one tree. Most of these were brought home safely to thrive in the back garden.

THE MAP BUTTERFLY *Araschnia levana* L.

On our second trip we found the butterfly f. *prorsa*, commonly on the 2nd August in the forest near Couve. They were flying along the roadside where nettles were growing. David managed to get a female to lay eggs on a nettle spray — they are laid in a chain, suspended from the underside of the leaf.

THE MOUNTAIN FRITILLARY *Brenthis napaea* Hffseg.

This species was commoner than Shepherd's fritillary (*B. pales*) and at a stop on the Silvretta Pass in Austria I found pairs *in copula* on the grass stems in large numbers. The sun was shrouded after rain. The females were heavily suffused with black scaling.

THE SCARLET TIGER *Panaxia dominula* L.

The Scarlet tiger was flying commonly in a forest glade in the Vosges on the 1st August and we obtained eggs from two females. The form was different from that of the typical English race with there being a lot more white marking on the forewings. In the same area also Jersey tigers, (*Euplagia quadripunctaria*), were observed.

On our trips we are always interested in the flora and the fauna, other than the Lepidoptera, and in the Val Roseg we had a very close view of a family of young Nutcrackers. They have a very harsh call and are slightly larger than Jays with plumage reminiscent of the Starling. Here we also had several sightings of Marmots and Chamois, one of the latter getting itself caught briefly in a fenced enclosure. In the Rhone valley and around the North Italian lakes we regularly had sightings of the Black kite, *Milvus migrans*, but on our journey from the Vosges across to Bar sur Aube, David recorded sixteen Red kites, *Milvus milvus*, seen from the roadway as we drove. This would indicate that it must be extremely common in this part of France.

One Golden eagle was seen on the Silvretta Pass, and two eagles, species not identified, circled above us when we camped near Lake Orta. It all adds interest to an expedition and even on the wettest day there is something to see and do.

REFERENCE

HIGGINS, L. G. and RILEY, N. D. (1980) *A Field Guide to the Butterflies of Britain and Europe*. Collins, London.

THE SADDLEBACK MOTH *SIBINE STIMULEA***A Cochlidiid successfully reared in England**

by Wesley Caswell (3133)

When I was in Stanmore Hospital in 1959/60 for about a year, I came across a really beautiful picture of what was simply called "THE SADDLEBACK" — a larvae covered in fat spines and beautifully coloured. I cut this out of the magazine and stored it away later, and decided to try and obtain this species for myself to rear and see what it was really like. That started a search which lasted some TWENTY-FIVE YEARS . . . in fact it took me a great many years even to find the

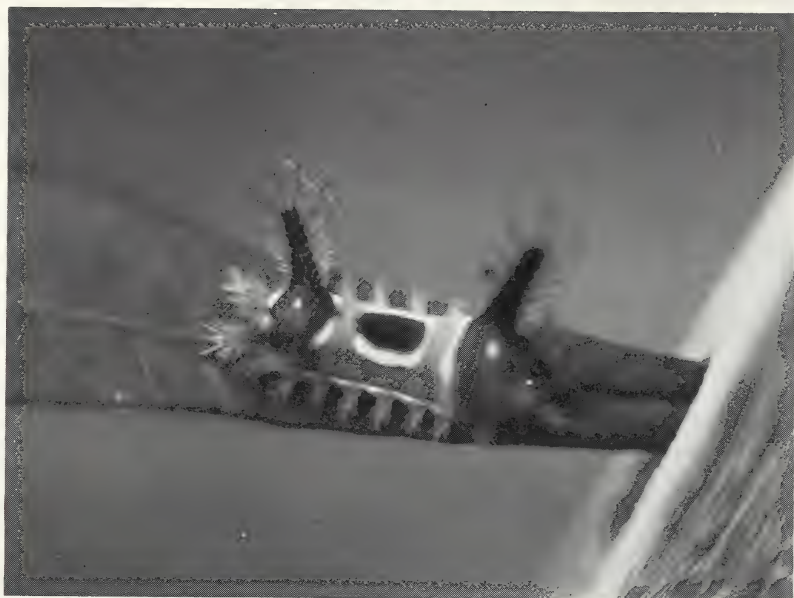


Fig. 1. The fullgrown Saddleback larva.



Fig. 2. The cocoons of the Saddleback moth.

scientific name of the moth, but even having obtained that from a fellow AES member I was not much nearer to getting livestock, for it seems it is not a species many have heard of, and even fewer (if any) have reared in England, and being a small species, not exactly everybody's cup of tea.

Anyway, my own search continued up to 1985, when, at last — yes, I found someone in the USA where it comes from, who said they could get me some, and shortly afterwards a small parcel arrived from the USA and inside were eight cocoons of THE SADDLEBACK MOTH. (These I got in exchange for some silkmoth ova which he wanted.)

The cocoons were quite tiny, brown, and measured only about $\frac{1}{2}$ " long by $\frac{1}{4}$ " — actually they looked very similar to the cocoons of our English Oak eggar moth, only much smaller. These cocoons overwintered (in an unheated room extension) and finally emerged in June 1986. The moths themselves are very insignificant, being mainly a dull brown colour, not too unlike our Lackey moth, but much darker. I did not really expect my luck to hold and actually get a pairing from so few cocoons, but . . . they proved me wrong, as they paired very easily, just after dusk around 10.00pm, and in fact each moth paired two to three times before any ova were laid, which had me rather worried waiting days for any ova to appear! I expected to see a lot of tiny ova scattered about or in batches on the cage, but surprise, the ova do not look anything like ova of any moth I've seen — a batch looks just like a thin splash of yellow paint, with no sign of actual eggs. These were stuck to the edge of the cage in corners etc, and were quite impossible to move. To try to move any of the 'blob' resulted in the same way as if you tried to take a bit of wet paint off something. I did not think eggs could possibly be in this 'stuff' but waited anyway, and, in about ten to fourteen days, minute "larvae" appeared, so small as to be hardly visible to the naked eye.

According to Holland's *The Moth Book*, this species is found in "corn fields", so naturally I got some corn going in pots long beforehand — but, yet another surprise, they would not touch it! A great many died, and I was fast giving up hope of ever seeing a REAL Saddleback larva of any size. Then as a 'last resort' I tried something close at hand in my garden — *Rhus* (*Sumac*) and about 12 remaining larvae started to feed on it, not eating the whole leaf through like most larvae, but just the top layer.

They did quite well on this, and continued to grow slowly, until at last I could recognise the 'famous' saddleback from which the larva gets its name. This is as it suggests a brown 'saddle' right on the back of the larva. At both 'ends' of the larva, which is in general green in colour, rise fat little spiny stumps, which again, according to *The Moth Book*, "have a sting not to be compared to a nettle". The larvae, though small, are extremely beautiful, the brown 'saddle' being surrounded by a thin white



Fig. 3. The moth *Sibine stimulea*.

circle, and the stumpy spines being shades of brown. Another strange characteristic of the larvae is that they 'stick' to whatever they touch instantly! If a pair of forceps tips the larva even slightly, it sticks, and likewise with practice, it is easy to transfer them from one leaf to a new one as they stick easily back on the new leaf too! They do not move much, and in fact seem to stay in the same place all the time, not moving more than an inch at most! When they *do* move on rare occasions to find a new part of a leaf, they look like a tiny tank, being so short and bulky. In the USA they are known as Slug caterpillars, no doubt getting the name from the fact that no legs are really visible at all — they lie very flat against the leaf and when seen resting on a piece of transparent plastic, their underside is in fact very similar looking to a small slug. As they grow slowly larger week by week, they become even more beautiful with extremely 'sharp' colours. The full grown larva measures just over 1" long by a little over $\frac{1}{2}$ " 'wide' and the most noticeable features are the four main horns, two at each end, which are covered in small bristles. Under the front main horns are two much smaller ones, and below these, two more smaller still.

The larva itself at this stage is pea green, with dark brown 'end' sections and horns, with the brown saddle quarters ringed in white. Around the base of the larva there is a white line going three-quarters of the way around, and also around the entire base of the larva are tiny tufts of hair

or bristles, numbering twenty-two in all. Seen from certain angles, the larva reminds one of certain animals! Head on, it looks just like a tiny bull, with just the main horns and head visible. Seen from the 'rear end' it looks just like some other staring animal, as it has two white (which eventually turn yellow) 'eyes' with smaller horns above (ears?!). And of course as mentioned earlier from the top looking down, it looks just like a 'green' horse with the saddle all ready in place! Quite an amazing little 'animal', and although I normally only rear the much larger species of silkmoths etc, this particular larva has been one of the most interesting I've ever reared in getting on for some 30 years of rearing. The sting by the way is in fact quite nasty, similar to an *Automeris* species of silkmoth, but does not last long, and is usually gone by the next day.

One final point worth mentioning perhaps, is the fact that the larvae are very difficult to photograph! Either the fat spines come out beautifully clear and the body is blurred, or *vice-versa*! Also perhaps worth mentioning is the fact that the resulting cocoons from my Sumac-fed larvae seem to be larger than the original wild ones!

And finally, the feeding-up time for the larvae is about two months.

REFERENCE

HOLLAND, W. J. (1903) *The Moth Book* Doubleday, Page & Co.

SCIENTIFIC AND VERNACULAR NAMES

by A. M. Emmet (1379)

In editorial comment in the February issue of the *Bulletin* (Vol. 46, p.17) one reads "there is far more stability in the English names of moths than there is in the Linnaean scientific binomial system". Nothing could be further from the truth. I shall illustrate this from the butterflies, since I have recently been studying their vernacular names for MBGBI Volume 7 which will be the next to be issued. *Pyronia tithonus* (Linnaeus) has one Latin synonym but nine English names, viz, in chronological order, the Lesser double-eyed butterfly, the Hedge eye with double specks, the Orange field butterfly, the Gatekeeper, the Large gatekeeper, the Clouded argus, the Large heath, the Small meadow brown and the Hedge brown. Of the names in current use, the Clouded yellow, the Small white, the Black hairstreak, the Brown argus, the Mazarine blue, the Small tortoiseshell, the Marsh fritillary, the Scotch argus, the Gatekeeper and the Large heath, have all been applied to more than one of our butterfly species. Seventeen of the English butterfly names used by Heslop in his now obsolete list of 1959 differ in detail or entirely from those used by South. Perhaps the most dangerous name of all is 'Black hairstreak', which was still being used for the White-letter hairstreak by many authors up to the end of the last century. Scientific names follow rules: vernacular names know none.

COLLECTING IN THE LANGUEDOC-ROUSILLON AREA — SEPTEMBER 1986

by Gareth King (8585)

I was fortunate enough to gain a place on an SCI workcamp in the French Pyrenees and although the workcamp itself was a near disaster, the insect life in abundance in the vicinity, somehow made up for its failings. The camp was in the village of Oust about 17 km south of St. Girons at a height of about 400m. Throughout the workcamp's duration, the weather was generally warm with occasional suddun downpours of rain, a combination of which led to the lushness of the vegetation for an area only 200 km from the Mediterranean. The latter area of which offered a useful contrast when I was to tour there a couple of weeks later.

The nature of the workcamp with only four hours of work per day (unofficial?) led to there being plenty of free time per day in which I was able to indulge my interest in entomology. Just behind the SCI building was an area of meadow owned by a local farmer who at the time of my visit was in the process of cutting it, which did not, though, seem to affect the amount of lepidoptera seen. That part of the meadow which was not cut contained a profusion of flowering leguminous and umbelliferous plants, the latter of which attracted numerous butterflies. A species of Satyrid I had not seen before and which was very striking was the Great banded grayling (*Brintesia circe* F.) which would glide around effortlessly and then suddenly dip into the grass not to be seen, or else settle on a tree-trunk. At first I would follow one of these specimens hoping to catch an ovipositing female, but it was not to be. Most of the *B. circe* seen were rather worn, presumably because, being a July/August flying ssp. those specimens seen were stragglers, but then, I saw many more until quite late in September. Another common ssp. was the Pearl-bordered fritillary (*Cloissiana euphrosyne* L.), fresh specimens as well, and yet despite their number I could not find any violet plants either on the edges of the meadows bordering on the nearby wood or in the wood itself. Several Clouded yellows (*Colias croceus* Fourc.) were seen flying around and feeding on lucernes and clovers of which several were searched for ova or larvae and yielded none. I was disappointed to see so few Swallowtails (*Papilio machaon* L.) as there was plenty of food-plant around, and I only ever saw two Scarce swallowtails (*Inhielides podalirius* L.) in St Girons itself, although they were a pair in the act of courtship.

Aside from butterflies seen in the vicinity of the workcamp I was more interested in the possibilities of finding larvae and was rewarded in finding several species.

In the early morning as the sun rose it was common to see fully-grown Fox moth (*Macrothylacia rubi* L.) larvae sunning themselves on grass stems; several of these were collected and it remains to be seen whether they

survive the winter as I believe they are notoriously difficult to keep. True to form, the larvae were very polyphagous; those found feeding on wild strawberry or bramble took well to sallow or poplar, whichever was the most convenient. Alongside a stream on a sallow bush were found a small nest of Buff-tip larvae (*Phalera bucephala* L.). Unfortunately (unless one is a Dipterist!) many were parasitized.

When one is abroad it is common for the romantic entomologist to indulge his or her fantasies on the possibilities of finding subspecies. Well, for me, such a ssp. was the relatively common Map (*Araschnia levana* L.). I saw many imagines, especially in the vicinity of streams where beds of nettle were growing. However, my dream was only partially realised by the discovery of only a few larvae as they fed singly, wrapped-up in nettle leaves. Of several females watched over nettle beds not one obliged me with ova. Oh well, my fantasies must move to the possibilities of Deathsheads or Olanders . . .

One of the big misfortunes (for the volunteers at least) was the indignity of staying in less than basic conditions, in a hut on the slope of a hill. However, such indignities were overcome, to an extent anyway, by the discovery of a nice, healthy nest of what I suspect were Knapweed fritillary (*Melitaea phoebe* D & S.) feeding on a type of knapweed, in a web on the slope of said hill. For me this seemed to be the high-light of the trip. To add to this find one might be satisfied with a find of Camberwell beauty (*Nymphalis antiopa* L.) larvae (not likely in September), but I had to be content with a single sighting in the vicinity of a wood-pile near a stream.

On from the neighbourhood of the workcamp, discoveries were no less plentiful. The road running from Oust to St Girons ran parallel to the Salat. Due to the relative isolation of Oust, bus services out of the village are not noted for their frequency. So, due to the non-arrival of my ride (?) — I had to walk to St Girons. That there was plenty to see was substantiated by the fact that it took 5½ hours to walk 17 km! Apart from the by now ubiquitous Fox moth larvae, due to the hot weather and supply of flowers many interesting ssp. were seen. Several Hummingbird hawks (*Macroglossum stellatarum* L.) were seen feeding in quiet flight from buddleia; as usual, nearby bedstraw plants were searched for ova or larvae with predictable results. One particular patch of buddleia attracted several Cardinal butterflies (*Pandoriana pandora* D & S.) especially. An interesting, although sinister note though, was the number of Hornets attempting to catch a butterfly; these were also seen around umbelliferous plants. Marjoram plants growing in reach of the stream attracted several Maps (*A. levana*), although they, as ever, refused to lay ova.

Once I had finally collected my cycle from Toulouse, I had to cycle the 100km or so back from Oust. For about the first 40 km south of Toulouse there is much cultivated land with a resultant scarcity of insects, except in the sloe hedges where were found larval nests of one of the *Euproctis*

species of moth. A tract of wasteland just outside Toulouse attracted more attention than it need have done. For there lay clumps and clumps of Fennel, stripped as well. Well, one can guess the possibilities that lay therein. But, alas, they were rare.!

With the workcamp finishing earlier than expected I was left with the possibility to cycle on to the Mediterranean coast.

As hinted at previously, there are considerable differences between the Mediterranean coast and the Pyrenees. The descent from Oust via St Girons stretched for nearly 200 km but fortunately for my cycle and I, it was mostly downhill! Nothing new was noted for the three-day trip to the coast, but the cooling of the weather for the meantime probably contributed to such. Beyond Rivesaltes the vegetation becomes distinctly Mediterranean-standard, with oleander, tamarisk, cyprus and grapevine replacing the oaks and walnuts of the Pyrenees. My first stop on the coast was the resort of Le Barcanès, which turned out to be the most developed resort on the Languedoc coast. Searching on my first night revealed nothing of any note which was maybe surprising if one can picture the Mediterranean coast, a breeze off the sea, warm, and a bed of night-scented stock, one would perhaps expect several hawkmoths to be feeding from the blooms, but only one and *Convolvulus* (*Agrius convolvuli* L.) at that was seen.

Interestingly a large, brown Mantis was in residence on a flower, presumably waiting in anticipation for an insect to come in range of its jaws. The following morning's inspection of areas around lights revealed only a few Geometrid species and several Oak eggars (*Lasiocampa quercus* L.) out of reach. It was the same for much of my stay on the coast until it all came to an end abruptly when my cycle received a mortal puncture demanding an immediate return to London!

IN THE ISLES OF SCILLY

by S. Nash (7088J)

On the 30th August, 1986, we arrived for a fortnight's stay on St Mary's, Isles of Scilly. This was our third visit, but the first time with the MV light. It was also the first time (and most definitely the last time) that we went by boat.

There are five inhabited islands and over one hundred uninhabited island and rocks, but St Mary's is the largest and to be recommended for its facilities.

The weather for the two weeks of our stay was surprisingly good, since the tail-end of hurricane Charlie had just hit the islands, and the damage was still visible when we arrived. The climate there is on average a few degrees warmer than the mainland, and there are no frosts, giving an advantage for migrant species such as the White-speck (*Mythimna uni-*

puncta) and the White-point (*M. albipuncta*), which had obviously bred there.

We tried to cover all of the inhabited islands, but this proved to be impossible and we only managed three—Tresco, St Agnes and Bryher.

St Agnes proved quite successful, the day being very hot and still; there were large numbers of butterflies about including a male Clouded yellow (*Colias croceus*) which we failed to net. Surprisingly, another male (or the same one?) was also noted on Bryher — the most northerly island.

Although Tresco is reputed to be the richest for lepidoptera generally, we were a little disappointed and the only find of note was the beetle *Chrysolina banksi*. We spent several hours strolling around the Abbey gardens, discreetly shaking most of the plants and inspecting in detail some of the more exotic items, but failed to find anything.

For us, St Mary's proved more interesting with the varied habitats including marshes, moors, sand and shingle, and it was also strange to see woods comprised almost exclusively of tall Elms.

During our walks we spotted two Hummingbird hawks (*Macroglossum stellatarum*), and Silver Y's (*Plusia gamma*) were about in large numbers amongst the heather and ferns. At Peninnis Head we found the Gem (*Orthonama obstipata*) and at Bar Point there were various species of larvae feeding on orache growing among the sand and these included the Sand dart (*Agrotis ripae*), the Plain pug (*Eupithecia simpliciata*) and two other species not yet identified.

There are two large reed beds which support a wide variety of wild-life (mostly birdwatchers), and is probably the source of some of the Wainscots caught in the trap. Such species include Webb's wainscot (*Archanara sparganii*), the Twin-spotted wainscot (*A. geminipuncta*), the Small wainscot (*Photedes pygmina*) and the Small rufous (*Coenobia rufa*).

At The Garrison we were fortunate to see the Autumn ladies tresses, one of only two species of orchid growing on the island.

Here, we also hoped to find *Typhaeus typhoeus*, a dung beetle which has declined due to the much reduced rabbit population following the introduction of myxomatosis. Sadly, we were a little too early in the year, and the only one we saw was a set specimen in the Museum.

The MV light was run in the field beside our chalet and this proved an excellent spot being on high ground in the centre of the island, with open views to the sea on the south-west. On the best night we recorded 1500 moths in the trap.

On the 11th September with the kind help of Mr David Knight, we set the trap in a rifle range at The Garrison. Although at that time the weather was beginning to turn against us, it proved a good area, particularly for such species as the White-point, the Dark swordgrass (*A. ipsilon*) and the Feathered ranunculas (*Eumichtis lichenea*).

MV RECORD

High Lane, St Mary's, Isles of Scilly 30th August - 12th September 1986

	SPECIES	DATE:	30	31	1	2	3	4	5	6	7	8	9	10	11	12
Angle shades	<i>P. meticulosa</i>								12	21	11	8	12	5	12	
Barred red	<i>H. fasciaria</i>			1			2	5	6	7	4	5	2		1	
Brimstone moth	<i>O. luteolata</i>		1	1	2	1	13	12	26	35	45	11	9	13	1	
Bordered beauty	<i>E. repandaria</i>								1							
Bright line brown eye	<i>L. oleracea</i>					1			1							
Bordered straw	<i>H. peltigera</i>								1							
Brussels lace	<i>C. lichenaria</i>									1						
Cabbage moth	<i>M. brassicae</i>							1	1	2		1	3			
Crescent dart	<i>A. trux</i>		1		1											
Common rustic	<i>M. secalis</i>		2	4	6	4	4	6	11	28	16	9	9	1	1	
Common footman	<i>E. lurideola</i>			1							1					
Common carpet	<i>E. alternata</i>			1				1			3					
Common quaker	<i>O. stabilis</i>						1									
Convolvulus hawk	<i>A. convolvuli</i>						1				1					
Copper underwing	<i>A. pyramidea</i>									1			1			
Common wave	<i>C. exanthemata</i>									1						
Cyprus pug	<i>E. phoeniceata</i>									1						
Dark sword grass	<i>A. ipsilon</i>		1	2	2	4	4	6	14	21	21	17	38	13	84	2
Dark arches	<i>A. monoglypha</i>		2	3		2	3	2	1	5	5	1	1			
Dark barred twin-spot carpet	<i>X. ferrugata</i>		1	1	1		1	6	4	9	7	3		1	3	
Dingy footman	<i>E. griseola</i>		1		1		1	1	2	4	2	1	1			
Dark spectacle	<i>A. trigemina</i>				3			3		6		4		1	1	
Delicate	<i>M. vitellina</i>									1				1		
Double striped pug	<i>G. rufifasciata</i>										2					
Early thorn	<i>S. dentaria</i>		7	12	9	6	2	9	4	10	8	6	5	9		
Flounced rustic	<i>L. testacea</i>		25	47	49	26	36	30	59	39	63	59	84	52	10	
Flame	<i>A. putris</i>													1		
Flame shoulder	<i>O. plecta</i>		96	153	141	265	182	114	199	428	276	186	231	117	52	1
Feathered ranunculus	<i>E. lichenea</i>											1			9	
Gold spot	<i>P. festuacea</i>		1			1		1	2	3	1		1	1		
Garden carpet	<i>X. fluctuata</i>		1				3	3	5	3	4	1	1	1	2	
Grey pine carpet	<i>T. obeliscata</i>		2				2	5			2					
Garden pebble	<i>E. forficatis</i>									1						
Herald	<i>S. libatrix</i>		1													
Hummingbird Hawk	<i>M. stellatarum</i>			1												
Hoary footman	<i>E. caniola</i>								1							
Heart and Dart	<i>A. exclamatoris</i>			1												
July highflyer	<i>H. furcata</i>									1	1					
Knot grass	<i>A. rumicis</i>									1	1					
Lesser yellow underwing	<i>N. orbona</i>		14	11	9	14	15	3	27	25	14	26	39	11	32	1
Large yellow underwing	<i>N. pronuba</i>		8	29	22	12	32	35	74	146	89	81	86	60	120	
Lesser Broad-bordered yellow underwing	<i>N. ianthina</i>		3	10	1		3	3	4	7	2	2	4	1	3	
Lychnis	<i>H. bicuris</i>			6	1		2		2			2			1	
Lime-speck pug	<i>E. centaureata</i>							1	2							
Mother of Pearl	<i>P. ruralis</i>		2	2	2	1		2	1	10	12	8	1		16	
Mouse	<i>A. tragopoginis</i>		1	4	3		1	2	3	3		1		1		
Mullein wave	<i>S. marginepunctata</i>							1			2		1		3	
Nutmeg	<i>D. trifolii</i>		25	22	9	2	25	17	20	26	16	6	8	6	5	
Pearly underwing	<i>P. saucia</i>			1			1		1						1	

Purple bar	<i>C. ocellata</i>	1						2											
Pinion streaked snout	<i>S. costaestrigalis</i>							4		1									
Pale mottled willow	<i>C. clavipalpis</i>									1	2							1	
Rosy rustic	<i>H. micacea</i>	7	10	7	5	29	13	28	25	21	27	19	14	1				1	
Red twin-spot carpet	<i>X. spadicearia</i>	1	1		2	2	3	4		6	2								
Rush veneer	<i>N. noctuella</i>	4		1				1	6	3	3	1						2	
Riband wave	<i>I. aversata</i>	1							1										
Rusty dot	<i>U. ferrugalis</i>			2		2		4	1	15	5	2	1	1				2	
Rustic	<i>H. blanda</i>				1														4
Ruby tiger	<i>P. fuliginosa</i>			3	4	9	6	3	1	28	7	7	17					8	
Rosy minor	<i>M. literosa</i>								1	1									
Shuttle-shaped dart	<i>A. puta</i>	3	3	2	2	5	3	4	7	7	1	7	3	4					
Small square-spot	<i>D. rubi</i>	94	118	142	155	147	90	198	406	288	325	425	129	132	4				
Silver Y	<i>A. gamma</i>	3	3	2	2	4	7	4	6	7	10	8			27	3			
Straw underwing	<i>T. matura</i>	4	1	1					3	5	2	1	1						
Scalloped oak	<i>C. elinguaris</i>	5	8	7	6	7	7	11	18	6	7	4	9	8					
Square-spot rustic	<i>X. xanthographa</i>	7	3	2		3	2	4	4	10	6	7	1	9	1				
Smoky wainscot	<i>M. impura</i>	5	7	9	8	15	2	13	27	28	7	20	4	6	1				
Setaceous Hebrew character	<i>X. c-nigrum</i>	2	3	1	3	3	6	12	15	7	12	15	7	15					
Square-spot dart	<i>E. obeliscus</i>			1		1	1	2	2	1	1			3	2				
Single-dotted wave	<i>I. dimidiata</i>			1				1		2	2	2			2				
Small fan-footed wave	<i>I. biselata</i>			1				1						3					
Small wainscot	<i>P. pygmaea</i>				1			1	2	1		4	3						
Small mottled willow	<i>S. exiguus</i>						1		1		1	1							
Straw dot	<i>R. saricalis</i>								1		2		1	1					
Small rufous	<i>C. rufa</i>																		
										1									
Snout	<i>H. proboscidalis</i>									2			2						
Turnip moth	<i>A. segetum</i>								1				1					1	
Twin-spotted wainscot	<i>A. geminipuncta</i>									1									
Vine rustic	<i>H. ambigua</i>	6	7	5	9	13	10	32	34	20	19	29	12	28					
Vestal	<i>R. saccharis</i>					1													
White-line dart	<i>E. tritici</i>			1		1							1						
White-point	<i>M. albipuncta</i>						1		1	1	1		1		5				
White-speck	<i>M. unipuncta</i>								1	1			1						
Webb's wainscot	<i>A. sparganii</i>											1							
Yellow shell	<i>C. bilineata</i>	1									1				1				
Yellow-tail	<i>E. similis</i>			2	1	1	6	2	7	21	12	13	8	3	1				
Yellow-barred brindle	<i>A. virescens</i>	1					3	4		10	7	3	3						
SPECIES		30	31	1	2	3	4	5	6	7	8	9	10	11	12				

N.B. 11th September trap sited at the Garrison. 12th September — gale force winds and heavy rain.

Pyralidae — Isles of Scilly — September 1986

<i>A. hexadactyla</i>	Twenty plume moth
<i>N. noctuella</i>	Rush veneer
<i>U. ferrugalis</i>	Rusty dot
<i>E. forficatus</i>	Garden pebble
<i>E. hortulana</i>	Small magpie (in spider's web)
<i>P. ruralis</i>	Mother of pearl
<i>H. costalis</i>	Gold fringe
<i>E. monodactyla</i>	
<i>A. straminea</i>	

<i>A. geniculea</i>	Elbow-striped veneer
<i>M. asinalis</i>	Madder pearl
<i>P. cespitalis</i>	Straw-barred moth
<i>P. saxicola</i>	
<i>O. angustea</i>	Narrow-winged grey

Microlepidoptera — Isles of Scilly — September 1986

<i>Croesia variegana</i>	1 St Mary's
<i>Hofmannophila pseudospretella</i>	numerous
<i>Celypha lacunana</i>	very numerous
<i>Endrosis sarcitrella</i>	numerous
<i>Depressaria pastinacella</i>	numerous
<i>Plutella xylostella</i>	numerous
<i>Aethis beatricella</i>	1 St Mary's
<i>Choristoneura sorbiana</i>	1 St Mary's
<i>Clepis spectrana</i>	1 St Mary's
<i>Croesia comoriana</i>	numerous
<i>Cobesia littoralis</i>	very numerous
<i>Bactra lancealana</i>	1 St Mary's
<i>Acleris emargana</i>	1 St Mary's
<i>Acleris rhombana</i>	2 St Mary's
<i>Epiphyas postvittana</i>	numerous
<i>Agonoptrix subpropinquella</i>	numerous
<i>Agonoptrix umellana</i>	1 St Mary's
<i>Agonoptrix asimilella</i>	1 St Mary's
<i>Teleiopsis diffinis</i>	1 Tresco
<i>Schreckensteinia festaliella</i>	1 St Mary's
<i>Enarmonia fornosama</i>	1 St Mary's
<i>Epinotia nisella</i>	2 St Mary's
<i>Crosia laterana</i>	numerous
<i>Cydia succedana</i>	numerous
<i>Mirificarma mulinella</i>	numerous

Butterflies — Isles of Scilly — September 1986

<i>C. croceus</i>	Clouded yellow	1 Male St Agnes 4.9.86 1 male Bryher 7.9.86
<i>A. napi</i>	Green-veined white	numerous
<i>P. brassicae</i>	Large white	very numerous
<i>A. rapae</i>	Small white	very numerous
<i>P. aegeria ssp insula</i>	Speckled wood	very numerous
<i>L. phlaeas</i>	Small copper	numerous
<i>C. argiolus</i>	Holly blue	4 St Mary's
<i>P. icarus</i>	Common blue	numerous
<i>I. io</i>	Peacock	2 St Mary's
<i>A. urticae</i>	Small tortoiseshell	several
<i>V. atalanta</i>	Red admiral	6 St Mary's, 3 Tresco
<i>C. cardui</i>	Painted lady	2 St Mary's
<i>M. jurtina ssp cassiteridum</i>	Meadow brown	very numerous

HIBERNATING THE COMMA BUTTERFLY

by John Payne (5923)

As 1986 was a very good season for the Comma butterfly (*Polygonia c-album*) an attempt was made to hibernate a small number.

A few only were chosen, for, if not a success, little were to be lost! From a couple of females taken in July a large number were bred. A small quantity of these were given away and some of them brought through to the spring and a further brood then obtained.

My effort at hibernation was six imagines; three females, in an outside cage exposed to all weathers and facing north. They all came through the winter, not moving until the first mild days around 4th April. When, on the 15th of that month, courting and mating occurred, potted stinging nettle and cut female sallow catkins were put in the cage which was then also moved into sunshine until the early afternoon. The butterflies fed throughout on a liquid feed of fruit (fructose) sugar. An abundance of ova were laid and four of the imagines were released on 28 April.

The cage in which they were hibernated was constructed as follows:—

In size 22" square x 24" high, a one inch square wood frame covered in small mesh black netting. A removable 1" x 6" wide and ½" x 2" side frame was put on top after the imagines had stopped feeding in November 1986 and had taken up hibernating positions, which were all under the 1" square top frame of the cage. The cage was then moved to a position facing north where it was left until movement was seen on 4th April the following year.

DOES THE BRIMSTONE HAVE AN ALTERNATIVE FOODPLANT?

by Robert Murdoch (5718)

On May 26, 1986 I observed a Brimstone (*Gonepteryx rhamni*) laying eggs on a dock (*Rumex* spp) plant. There did not appear to be any buckthorn (*Rhamnus catharticus*) nearby and I have still not located any. Several of the dock plants in the vicinity had been laid upon and this particular female returned several times to lay on one particular plant.

I removed a leaf with about ten eggs on it and after hatching divided the batch into roughly two halves with the intention to rear half on dock and the other half on buckthorn. Unfortunately I found a spindle tree but no buckthorn. The larvae on the dock did not feed after hatching, so the only information I was able to gain was that the larvae clearly did not like dock as an alternative foodplant.

I should be very interested to hear about any other member's experience with Brimstones feeding on anything other than buckthorn. Do female

butterflies with specific foodplants lay anywhere if they become desperate? In the case of my observation, for the female to return time and time again implies that dock must have appeared as a viable food to her.

(Editor's note: Other reports of Brimstones laying on dock have come to my attention although no larvae have as yet been recorded feeding on it. In view of reports also of this butterfly sometimes abounding where there is none of its recorded foodplants, there is some mystery here which deserves further investigation.)

HYALOPHORA CECROPIA (SATURNIDAE) **(AN URBAN PIONEER)**

by Chris Young (5236)

After sixteen years of rearing this species and reading what the "experts" had to say, I felt the need to commit to paper some facts and opinions about this fine insect.

This spectacular moth arouses curiosity whenever it appears. Its size rivals any other species found in the midwestern U.S. (All right, to be technical, there are heavier moths — *Eacles imperialis* (Druce), for example — and a large *Telea polyphemus* (Cramer) has a wider wingspan than a small *Cecropia*.) It has been reared extensively in the U.K., and there has been talk of introduction into Africa to serve as the foundation of a Sericulture Industry.

Few moths are as easily identifiable as the Robin moth. Actually, I prefer the name Robin moth as it describes the species well, and I wish the name was in wider use here. One loses a whole area of description when using the Latin name as a common name.

One of the unusual aspects of the ova is not the ova at all, but the glue by which they are attached. It is a dark red colour, and it sometimes covers the bottom part of the ovum. This is easily seen when ova are laid on paper. The ova themselves are attached in rows of any number, though five or six seem to be popular. They are a dirty white in colour, oblong with no apparent distinguishing features. The larva emerges from one end; of course, only the larvae know which end to emerge from, but in a row of ova, they all emerge from the same end.

Egg laying is on many trees and shrubs, with species of *Prunus*, apple and elm commonly used in the wild. Since the larva frequently pupates on the bush it grew on, then, if female, mates and lays on the same bush, suitable food being utilised from generation to generation; each mother assuring her infants of proper nutrition. The egg stage lasts from ten to fifteen days, with no obvious change when hatching is imminent. Unfertilised ova are identical to fertilised ones, at least until they collapse.

The baby larvae are black and hairy not unlike the Emperor moth (*Eudia pavonia*). Their tastes in food are remarkable. I've seen them eating grass, dandelion and plantain. Thus, if for any reason the young larvae have fallen from the food plant or if their mother was too crippled to fly, it would seem that the larvae could sustain themselves on the herbage long enough to crawl to the nearest apple, maple, *Prunus* or whatever to eat properly. Although I've never actually witnessed one regaining its way up a trunk of a food plant, I assume it is done.

The second instar is dramatically larger than the first. Yellow predominates, but black bristles remain. The thorax area develops tubercles which will remain throughout its larval existence. Feeding occurs on either side of the leaf, both by day and night. The third instar is again different with the thoracic tubercles red, and the ground colour green; the head is also green. At this stage, the larvae are large enough to "stem" the leaves in the fashion of other respectably large larvae. They feed exposed, the ground colour helping them to merge into the leaves. The length increases to about two inches. The fourth instar larvae remain green, with red tubercles and yellow smaller tubercles along the sides.

The fully grown larva is a splendid fellow with a cobalt blue ground colour on the back, merging to green on the sides. The first two pairs of thoracic tubercles are red with black bases and small black hairs. The third thoracic tubercles are yellow and smaller yellow tubercles extend down the back. The side tubercles are blue, an unusual colour for any larva. They extend four inches or more, and as thick as a forefinger. Most seem more bulky than the one illustrated by Crotch in *The Silkmoth Reeler's Handbook* (1950 Ed.).

At this stage, the larvae find it difficult to hide. In addition to their bulk, they have large appetites which make their position obvious. They are attacked heavily at this stage by flies. I've found fully grown larvae covered with fly ova. Birds too, find the larvae attractive at this time. If they are sleeved, usually the best way to rear them, daily changes are necessary to accommodate their appetites.

In some years, fortunately rarely, disease attacks the fully-grown larvae. Only once have I experienced this occurrence in my outside sleeves, and then I almost lost all of them.

The full grown larva has some serious decisions to make concerning his cocoon. There are three obvious choices; he can make a compact or baggy cocoon plus he can spin it at near ground level, or relatively high up in the food plant. The decision is based on the coming winter weather and local sociology, though no one ever to my knowledge used *Cecropia* to forecast the winter weather.

Studies in rural and suburban areas in Illinois have indicated a 90% destruction rate by birds where the cocoons were constructed up on trees. These cocoons were in natural conditions, and if they could be seen by



observers, most sharp-eyed birds could spot them too. One wonders how many of the ones too well hidden to be found were destroyed. To return to the issue at hand, a wrong choice in cocoon construction means sure death during the winter. If the winter is long and snowy, cocoons on or near the ground may be relatively safe from rodents and certainly from birds.

A survey that I took in 1973 on a tall hedge in Detroit of 132 cocoons, revealed that 87 were alive, 24 had emerged, 13 were diseased, four killed by Diptera and four killed by other parasites. The tall hedge was planted in a dense hedge approximately three feet high.

No bird predation was noted, though cocoons on neighbouring maples had been pierced by birds. If there is a mild winter, rats and mice may take a heavy toll of the cocoons on or near the ground.

In 1986, well over 90% of cocoons I came across at ground level that were not already dead from predators or parasites had been attacked by rodents. Is the baggy cocoon more resistant to attacks by birds and rodents? This is certainly a possibility since it would appear to have more "give" when pecked or chewed. Another unknown — does the colour of the cocoon affect time of emergence? Possible, by differences in heat absorption, one would think that the interior of a darker cocoon would be warmer than a lighter one.

Cocoon colours in my experience vary from an off-white through grey to salmon to dark tan. It has been observed by many (Tuttle 1986) that five to ten per cent of the population emerge up to two weeks earlier than the main flight time, which in Michigan is early to mid June. Offspring from the earlier emerging parent seem to be healthier and larger than later offspring. (In the compact cocoon which is relatively narrow and long.)

The compact and baggy cocoons are both double walled, with a strong inner cocoon. I've found dead parasites emerged inside *Cecropia* cocoons attesting to their strength.

Only once have I been approached by a local resident while collecting cocoons in winter in the inner city of Detroit. On that occasion, I was stopped early one Sunday morning in January. A young man asked me what I was doing. After my explanation, he turned and just shook his head; his friend, however, asked me what I did with them. On responding that they were sold, their attitudes changes noticeably and not for the better. Urban collecting has its hazards too!

Cecropia though is definitely a city dweller; hence the Robin moth. Before I realized this, I spent countless fruitless hours looking in rural areas, and it was not until a friend informed me otherwise that I was successful.

In southeastern Michigan, the population has been rather stable, at least while I've been collecting. There have been years of abundance and years of lesser abundance, but not until 1986 has *Cecropia* been hard to find. This winter, almost every cocoon was dead, either parasites or predators have killed them. In addition, the city of Detroit decided it was a pest and sprayed some areas against it. I don't believe that spraying was responsible for the collapse of the population. It's more probable that a combination of circumstances came together at once. Hopefully, it will be back in force in 1987.

The adult main brood emerges in early June in Michigan, and is single brooded. At least that is what the experts say. However, if I may quote, "on October 26, 1984, I was surprised to find an adult male *Cecropia* that had just emerged from its cocoon. The moth was in perfect condition, and apart from its forewings, a little darker than usual, was quite normal in appearance. This particular individual had been raised by my daughter from ova laid in early July by a captive female. The larva was fed on lilac and had pupated in late August. It was kept alone in a plastic box. It had been kept inside, but because of the mild autumn, it had not been subjected to artificial heat nor air conditioning. It had NOT experienced a cold period. This was the first fall emergence I have had with *Cecropia*."

I haven't had any more since I wrote that. Kimball (1985) however, writes that in Florida, records are for March, April and July, with larvae reported in October, single generation? Possibly, but larvae in October would mean adults in late August or early September. Many authors have confirmed my own observations (Collins and Weast 1961) that *Cecropia* has a concentrated flight time, eight weeks at the maximum. March to September would seem improbable.

to be continued.

Standard reference works for the entomologist



Just complete:

The Spiders of Great Britain and Ireland

written and illustrated by Michael J. Roberts

Two volumes of text and structural line-drawings describing and illustrating all 617 species of spiders found in Britain and one volume of superb colour plates depicting 311 species of distinctly different appearance, considerably magnified.

'... no further books directed towards the identification of British spiders will be required for many years to come.' A. F. Millidge

Clothbound

Volumes 1-3

ISBN 0 946589 18 6 £135.00 net

in progress:

The Moths and Butterflies of Great Britain and Ireland Volumes 1-11

edited by John Heath and A. Maitland Emmet

'An absolute must for all those seriously interested in lepidoptera and, for the quality of production and with coloured plates, very good value indeed.' Brian Gardiner, *Bulletin of the Amateur Entomologists' Society*

Vols 1, 2, 9 and 10 available in both cloth and paper covers

Volume 7 (Hesperiidae to Thyatiridae) due Summer 1987

This volume covers all the butterflies and some families of larger moths. The two introductory chapters deal with Classification and Re-introduction and the 24 colour plates are by Richard Lewington.

Clothbound

Vol. 7 ISBN 0 946589 09 7 approx. £47.50 net

also available:

British Pyralid Moths – a Guide to their Identification

by Barry Goater; illustrated by Geoffrey Senior and Robert Dyke

'It is hard to imagine a better work on this particular group of Lepidoptera.' John Bebbington, *Field Studies*

Clothbound

ISBN 0 946589 08 9 £19.95 net

Breeding Butterflies and Moths – a practical Handbook for British and European Species

by Ekkehard Friedrich (translated by Steven Whitebread and

edited by A. Maitland Emmet)

'THE working and reference book for all lepidopterists who wish to breed continental butterflies and British and European moths.' P. W. Cribb, *Bulletin of the AES*

Clothbound

ISBN 0 946589 20 8 £20.00 net

Paperback

0 946589 11 9 £9.95 net

The Dragonflies of Great Britain and Ireland

written and illustrated by the late C. O. Hammond, FRES

Second edition, revised by Robert Merritt (1983)

Generally recognized as the best identification guide to British dragonflies and damselflies, all of which are illustrated in colour.

Clothbound

ISBN 0 946589 00 3 £19.95 net

Paperback

0 946589 14 3 £9.95 net

Colour prospectuses and complete catalogue detailing current and future titles on the British and European fauna will be sent on request.

* Please add £1.50 each for titles £20.00 and under and £2.00 each for titles over £20.00 to cover postage & packing, if ordering direct from the publisher.

Access and Visa cards accepted.

Harley Books,

Martins, Great Horkesley, Colchester, Essex CO6 4AH

Tel: (0206) 271216

ENTOMOLOGY

**BOOKS & PRINTS
BOUGHT & SOLD**

●
*Mail Order specialists in rare
and secondhand books.
New books also supplied.*

●
Search service for O/P titles.

●
CATALOGUE FREE ON REQUEST

JOHN TROTTER

11 Laurel Way, London N20
Telephone 01-445 4293

LEPIDOPTERA LIVESTOCK SUPPLIED

DATA LABELS

PROMPT SERVICE

OVERSEAS ENQUIRIES WELCOME

**For details and sample labels,
write to: P.D.J. HUGO,
115 Thrupp Lane, Thrupp
STROUD
Gloucestershire GL5 2DQ.**

(Please mention this journal in your reply)

MIDDLETON INSURANCE SERVICES

Contact us for all your insurance requirements, including:—

Household insurance, incorporating:

Cover for Cabinets and Drawers

Collections at Home or whilst on Exhibition (including transit)

Apparatus kept in the Home

Equipment used in the Field

Travel insurance for Holiday, Business or Collecting

Trips in the UK or Abroad

Competitive Motor Insurance Premiums for Cars, Motor Cycles,
Mopeds, Vans, Three-wheelers etc.

Full Commercial and Business Insurance Protection

Complete Life Assurance Service, including Savings Plans, Unit

Linked and Endowment, Individual and Company Pensions,

Mortgages and Re-mortgages.

Write or Telephone **David Keen** or **John Turner** for free,
no obligation, advice and quotations.

**ORCHARD HOUSE, 53-56 PARSONS STREET, BANBURY, OXON,
OX16 8NB**

TELEPHONE (0295) 66655

THE AMATEUR ENTOMOLOGIST'S SOCIETY
A NEW PUBLICATION

LEGISLATION TO CONSERVE INSECTS IN EUROPE

By N. M. Collins

The Society is pleased to announce a new publication produced in conjunction with IUCN (the International Union for Conservation of Nature and Natural Resources) Conservation Monitoring Centre (UK), the IUCN Environmental Law Centre (Germany) and the UK branch of the World Wildlife Fund.

The aim of this publication is to present in a clear, concise and understandable manner the International conventions (such as CITES, the Bonn and Bern Conventions), and legislation enacted by individual European countries. In particular, it lists those species specifically protected by legislation.

ISBN 0-900054-46-8

Price £3.40 including postage

available from:

AES PUBLICATIONS, 4 Steep Close, Orpington, Kent BR6 6DS.

**AN INDEXED LIST
OF BRITISH
BUTTERFLIES & MOTHS**

Scientific and English Names

By J. D. Bradley and D. S. Fletcher

Available from:

J. D. Bradley, 53 Osterley Road,
Isleworth, Middx TW7 4PW.

Price:

1 Copy — £6.00 incl. p. & p.

2 Copies — £9.00 incl. p. & p.



**NEW WINTER
CATALOGUE**

Thousands of butterflies from
around the world at low prices,

Books,

Moth lights, and more!

**Free £2 discount coupon
included !**

Send 31p stamp for your copy now:

APARTADO 7911 Tel: 506-284768
100 San Jose Telex: 2913
Costa Rica
(Central America)

A NEW AES PUBLICATION

THE HYMENOPTERIST'S HANDBOOK

By Clive Betts and Daniel Laffoley

The Society is pleased to announce the publication of a new and completely revised second edition of this handbook.

The work covers palaeontology, phylogeny, systematics, gross morphology, natural history, studying, collecting, preserving and keys to the main families. 208 pages, 39 figs, plus 124 figs in keys. Sewn, Paperback. Price (including postage) £6.70.

AES HANDBOOKS AND LEAFLETS

A Silkmoth Rearer's Handbook (hardback edition).	£13.00
A Lepidopterist's Handbook.	£5.60
Insect Photography for the Amateur	£3.40
A Dipterist's Handbook	£7.70
Practical Hints for Collecting and Studying Microlepidoptera	£2.85
The Study of Stoneflies, Mayflies and Caddisflies	£2.85
Breeding the British Butterflies	£2.85
Breeding the British and European Hawkmoths	£2.85
The Phasmid Rearer's Handbook	£2.30
Some British Moths Reviewed and a Guide to the Critical Species	£2.85
Collecting and Studying Dragonflies	£2.30
Insect Light Traps.	£1.75
Rearing and Studying the Praying Mantids	£1.75
Rearing Crickets	£1.25
A Label List of European Butterflies	£1.85
Collecting Clearwings	£0.75
Collecting Lacewings	£1.25
Killing, Setting and Storing Butterflies and Moths	£1.75
An Amateur's Guide to the Study of the Genitalia of Lepidoptera	£1.75

Please make cheques/postal orders payable to "AES PUBLICATIONS"

AES PUBLICATIONS, 4 Steep Close, Orpington, Kent BR6 6DS

